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VAN SWIETEN'S  
COMMENTARIES

A B R I D G E D.

By Dr. SCHOMBERG, of BATH,

Fellow of the Society of ANTIQUARIES.

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Quidquid præcipies, esto brevis ; ut cito dicta  
Percipiant animi dociles, teneantque fideles.

HORAT. de Arte Poeticâ.

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L O N D O N :

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# P R E F A C E.

**V**AN SWIETEN, in his Commentaries upon the Aphorisms of BOERHAAVE, has undoubtedly proved himself a consummate master of his subject, and shewn an extensive reading; but then he has fallen into a prolixity, which, tho' luxuriantly learned, may be tedious to the experienced practitioner, and frequently disgusting to the young student, who is easily frightened at the sight of voluminous writings:

P R E F A C E.

men, like children, must be sometimes cheated, and imperceptibly led into knowledge: instruction is most impressive, where it is least incumbered.

This consideration induced me to attempt an abridgment: I do not mean, however, to disengage the attention of the studious from pursuing their journey through that field of medical learning; in imitation of the *Spaniards* returning from their first *Indian* conquests, I produce a few rich materials, in order to incite them to a more narrow and close inspection.

It is *eight years* since the learned  
AUTHOR of the Commentaries pub-  
lished

P R E F A C E.

lished his third volume ; in the preface to which, he gave us room to hope, the interval between that and his fourth and last volume, would not be as tedious as the preceding ones had been : We are still left in impatient expectation ; neither has VAN SWIETEN as yet informed us when we are to be obliged. — This delay called upon me to print the abridgment, which, though *incomplete*, is, however, not *imperfect* : my readers may depend upon having the remainder as soon as the fourth volume comes out, and my avocations will permit me to go on.

Though I confess vanity had some share in my undertaking this  
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P R E F A C E.

compendium; it was not that of appearing in the light of an *author*, but of a person who most ardently endeavours and wishes to be of use to the best of his abilities. If I have succeeded in these intentions, my pains will be sufficiently rewarded, if not, I hope I may have leave to say,

*Vitavi denique culpam ;  
Non laudem merui.*

V A N

## E R R A T A.

P. 1. l. 3. for *in whom there was nothing amiss*, r. *in whom nothing was deficient*. p. 1. l. 6. for *we undergo so many alterations every day from the change of the air which surrounds us*, r. *for we daily undergo so many alterations from the circumambient air*. p. 1. l. 11. for *in a looser signification*, r. *in a looser sense*. p. 1. l. 12. for *and for this reason, I apprehend, Galen has defined health in this sense*, r. *and this, I apprehend, is Galen's meaning in his definition of health*. p. 3. l. 1. for *the name of the animal functions, &c. (in the first paragraph)* r. *the animal functions are those changes of the human body, which either disturb our ideas, or are disturbed by them*. p. 4. l. 8. for *whereof the privation*, r. *the privation of which*. p. 4. l. 20. for *into a putrid water*, r. *into a putrid colluvies*. p. 7. l. 10. for *effaces all our humanity*, r. *will cause a stupid insensibility*. p. 7. l. 12. for *lose the memory of*, r. *forget*. p. 10. l. 1. for *single observations*, r. *observations only*. p. 15. l. 18. for *approved of in all the ages which passed since*, r. *approved of in all ages since his time*. p. 38. l. 2. for *the first character of humanity*, r. *the first character of human nature, as it were*. p. 64. l. 24. for *obinate*, r. *obstinate*. p. 67. l. 2. for *give pills*, r. *given in pills*. p. 67. l. 15. for *putrid water*, r. *putrid colluvies*. p. 70. l. 7. for *beset with a thin liquor*, r. *besmeared with a thin liquor*. p. 86. l. 22. for *situation*, r. *situation*. p. 101. l. 2. for *whether any thing of putrefaction is confined*, r. *whether any thing putrid be confined*. p. 112. l. 6. for *a*, r. *an*. p. 139. l. 21. for *ædema cal-* r. *ædema ca-* p. 161. l. 1. for *drawing out*, r. *extracting*. p. 178. l. 25. *dele puff-ball*. p. 178. l. 26. *dele fungus*. p. 171. l. 1. *dele fungus*. p. 211. l. 5. for *peat*, r. *pent*. p. 240. l. 2. for *as discharge*, r. *as they discharge*. p. 265. l. 7. for *coloured note*, r. *colour denote*. p. 295. l. 19. for *the whence*, r. *whence the*.

A. B. C. D. E. F. G. H. I. J. K. L. M. N. O. P. Q. R. S. T. U. V. W. X. Y. Z.

The following is a list of the names of the persons who have been elected to the office of Mayor of the City of New York, and who have been sworn in as such, in accordance with the provisions of the Charter of the City of New York, and the laws of the State of New York, in the year 1898.

The names of the persons who have been elected to the office of Mayor of the City of New York, and who have been sworn in as such, in accordance with the provisions of the Charter of the City of New York, and the laws of the State of New York, in the year 1898, are as follows:

John A. B. C. D. E. F. G. H. I. J. K. L. M. N. O. P. Q. R. S. T. U. V. W. X. Y. Z.

T H E

## INTRODUCTION.

**I**T would perhaps be a very difficult task to find a man perfectly in health, in whom there was nothing amiss, either in the solids, the fluids, or in the motion of the fluids through the solid canals; for we undergo so many alterations every day from the change of the air which surrounds us, the affections of the mind, the greater tenacity, or larger quantity, of food we take down, &c. that we cannot but in a looser signification, be said to be in health; and, for this reason, I apprehend *Galen* has defined health in this sense. “No person, says he, “can properly speaking be said “to be perfectly in health; but we usual-

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“ly

“ly say such persons are in health, as  
 “have no particular complaint, and are  
 “able to discharge the common offices  
 “of life.”

Now health injured is disease. But for the greater regularity of enquiring into diseases, physicians have reduced the functions of an healthful body into three kinds, which they have named *vital*, *natural*, and *animal*. Those functions are named vital which are absolutely necessary to life, and without which there is no life. The natural functions are all those which are instrumental in repairing the several losses which the body sustains, and making good the several deficiencies both in quantity and quality.

Nature (*φύσις*) the old word used by *Hippocrates*, meant nothing more than the aggregate of all the physical conditions, which are required to that most constant, durable, and, at the same time, active power of moving, wherein life consists.

The



## INTRODUCTION. 3

The name of animal functions is given to all the changes wrought in the body of a living man, which occasion a change in the thoughts of the mind, or are produced by a thinking mind.

The chief end of all knowledge in the art of physic is to restore health to the sick.—Practice is that part of the science of physic which teaches how to find out, by undoubted natural signs in the patient, when there is a disease, what that disease is, in what state, whether in its beginning, increase, height, or declension, and by what method and means this disease now found out may be carried off.

A physician therefore must know what the disease is before he can cure it; for a disease is the disorder of some function requisite to health: how then shall he know what is amiss in this function who is not acquainted with all that is requisite to the due discharge of it?

The first part of the practice of physic takes in the discovery of diseases, the

#### 4 INTRODUCTION.

other teaches how a disease, when found out, may be cured.

But to this cure is required the true knowledge of all that we have mentioned above ; for a cure is such a change of the body, as removes the state which was termed a disease, and restores the state, whereof the privation occasioned the disease.

It would be a reproach to an artist not to know the instruments of his own profession ; and supposing a physician to have clearly discovered what ought to be changed in the body to produce health, yet if he knows not by what means to effect the change, he will do no service.

How is the nature of medicines changed by their various preparations ! The *Syrian Scammony* given pure dissolves the humours into a putrid water, and then carries them off by stool ; yet the same medicine, by being exposed to the vapour of burning sulphur, as in making the *Diagridium Sulphuratum*, is rendered almost inactive.

The

## INTRODUCTION. 5

The root of *Rhubarb* infused in hot water forms an innocent purge for every age and sex; but, by long boiling, loses both its fragrancy and virtue.

A physician ought also to be acquainted with the different methods of using his drugs.—*Resin of Jalap* given alone, and by its tenacity adhering to the folds of the stomach and intestines, has frequently brought on an *hypercatharsis*; but if this quality be corrected by pounding it with a little sugar, or the yolk of an egg, it may then be used with far more safety.

*Hippocrates* used to drop the very acrid juice of *Tythimal* into figs, that it might not injure the throat in its passage.

All medicines, when applied to a living body, are brought into action by life, and frequently produce different, and sometimes opposite, effects, in different subjects, from a particularity of constitution; nor can this ever be determined beforehand, but is only to be learnt from experience.

## 6 INTRODUCTION.

The same medicine shall produce a different effect in sickness and in health. The bile exalted by violent summer heats, if irritated by some gentle purge, shall frequently bring on an enormous quantity of stools; whilst six times the dose given to a man in a dropsy shall not occasion a single motion. Five grains of *Mercurius vitæ* given to a woman in a maniacal case wrought no effect; though before she was afflicted with this disease, a few grains of scammony threw her into fainting fits, through the violence of its operation.

In chronical diseases, when the viscera are almost tabid, and ready to fall to pieces, how dangerous is it to give even the mildest vomit of *Ipecacuanha*?

In diseases, nature so often endeavours by unknown means, to expel the latent morbid matter, whether it be the cause of the disease or its effect; that he who would imprudently disturb her in these good beginnings by opposite remedies, must always do mischief.

The

## INTRODUCTION. 7

The whole power of medicine consists in nothing more than making such a change in the body, as to amend the injured action of the mind that is united to it; for it is often a very slight disorder in the body which oversets the whole mind. Thus idiots are always observed to have mishapen heads from the birth. So a single ounce of blood extravasated under the skull effaces all our humanity. A boy of eight years old, during a hot season, used to lose the memory of all that he had learned, but two or three days cooler weather would restore it again, and with the hot weather the same calamity returned.—Innumerable other instances confirm this matter. It is very possible the cause of a disease may be removed, and of course the disease itself, and yet several of the functions may be left depraved by the preceding disease. A man labours, for example, so long under a severe autumnal quartan ague, till by the repetition of the fits, the solids are so weakened, and the fluids so dissolved, that a dropsy en-

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fues. Give him the Peruvian bark, the fever is cured, but the dropfy remains. This, however, will warrant no fuch conclusion, as that by taking away the cause of the difeafe you have not taken away the effect; for the Peruvian bark has fo subdued the course of the ague, that its effect, the fever, is gone; but the fever has fo changed the body as to make it dropfical; and though the fever be removed by the bark, yet thofe caufes remain from whence the dropfy followed as an effect, namely, the too great weaknefs of the folids and diffolution of the fluids.

We have a two-fold method of removing difeafes, either by acting directly on the difeafes themfelves, without changing the reft of the body, or, by changing the whole body, to deftroy and expel the difeafe.

A quartan ague, which had been treated in vain with purges, vomits, fwears, and which even kept its courfe in the midft of a falivation, (as I myfelf have

## INTRODUCTION. 9

have seen) was cured by the Cortex Peruvianus, without producing any other visible change in the body. This therefore we call a peculiar or specific remedy, as, in carrying off the fever, it works no other change in the body. Opium swallowed down, and lying in the stomach, removes all sense of pain, without disturbing the body. A stone falls from the kidney into the pelvis, and thence into the ureter, and thence arises intolerable pain, with convulsions of the lower belly, nausea, vomitings, &c. Now if the physician knew a remedy, by which to dissolve the stone that is lodged there, this would be a present cure; but for want of this he is forced to change the whole body by fomentations, clysters, bleeding, and the most emollient decoctions, that he may expel the enemy through the now relaxed and lubricated passages; and this is called a general cure.

There is no doubt but both medicines and the practice of physic were discovered  
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ed by single observations; for the first advances in physic seem to have taken rise from men's advising others in sickness to make use of remedies which they had found beneficial to themselves or others, in hope they might prove successful to them in like manner.

Such causes as jointly make up the proximate cause, are what are termed the pre-disposing causes (*προηγμεναι*) or (*προκαταρτικαι*) the occasional.

A plethoric person, for instance, after violent muscular motion in a very hot season, by the rupture of an artery in the cerebrum, falls into an apoplexy. The remote pre-disposing cause in this case was the plethora, the occasional causes the heat of the air and the increased impetus of the blood by muscular motion; but neither the heat of the air, nor the muscular motion, would have brought on the apoplexy, if the man had not been plethoric.

The disease, however thus understood in its causes, in the progress of it, is changing



## INTRODUCTION. II

ging the state of the body every moment, and doing still further mischief to the functions, and thus produces, as it were, new diseases, which are called effects of the disease, or *symptoms*: for under this name are comprehended all these preternatural appearances which are seen in the patient from the disease as a cause; yet so as that they may be distinguished from the disease and its proximate cause.

Thus, for example, a man in a pleurisy, through the sharpness of his pain, dares not dilate his breast in order to draw in his breath; by this means the blood passing with difficulty from the right ventricle of the heart, through the lungs, begins to be accumulated there, and forms a peripneumony. This now is a new disease, but springing from the pleurisy as its cause.

The physician observes all that passes during the disease; what does good and what does harm, and then forbids the one and prescribes the other; this is the doctrine of things useful and hurtful, which

which is of so great account in practice, and which gave the first rise to the art of physic.

Though a physician should have done every thing according to the rules of art, yet ought he carefully to attend the event, and observe whether it does good or not. *Hippocrates* lays down some certain signs, whereby to judge whether a purging medicine that has been taken shall have done service or no: “*If, says* “*he, the humours be voided which ought to* “*be carried off, the patient will be relieved,* “*and easily bear the discharge; but if not,* “*the contrary effect will follow.*”

What will be the idea of the best physician in future times we know not; but he is to be reckoned a good physician now, who makes use of all the assistance by which, through the happiness of the present age, the art of physic has been improved.

When in the beginning of an exact quartan, there comes on that surprising coldness, ascending from the lowest degree

gree (to sense, like that of a cool air,) to such an extreme rigor as to make the limbs all stiff and inflexible, and frequently to take away all sense, so that the person affected shall burn his legs to the bone without feeling it; with what variety of knowledge does this furnish the physician? for it is demonstrated in physics, that cold is the absence of fire, or its not being determined to a particular place; and from the known laws of the human body, it is now certainly known, that coldness is the effect of a diminished circulation: now in the beginning of a quartan, we evidently find that the circulation is diminished; the heart indeed beats more swiftly, but not being able to overcome the increased resistance, it cannot propel the vital blood to the extremities; these extreme parts therefore first grow pale, the tip of the nose becomes very pale, the nails, and extremities of the fingers, and so the lips. And as the cold contracts all the parts, the veins also being constricted, propel their humours to-

wards

wards the right ventricle of the heart with the greater force; the left ventricle of the heart, in the mean time, is not able to throw out the whole quantity of blood contained in its cavity, into the contracted arteries, by which means the blood is accumulated about the heart and lungs, and occasions that astonishing uneasiness, panting, and struggling, by all the force of respiration to throw off the oppressing load. Hence we conclude, that there is at this time great danger of death, and reason to fear, lest the blood, which almost stagnates in the larger veins, should run into polypous concretions, which are often not to be dissolved again during the remains of life.

He therefore is not to be esteemed a good physician, who only takes notice of the phænomena of diseases; but he that weighs them, and is able to point out what are the necessary consequences following from them.

Nor yet is this sufficient; but it is farther requisite *that he compare them all*  
*with*

*with each other* : for the extreme cold of a quartan will be followed by a heat gradually increasing, till it comes to be extreme : but heat distends, lengthens all the solids, and increases the bulk of the fluids : the solid fibres therefore, which were shortened by the preceding cold, will be lengthened by the subsequent heat ; but nothing weakens the frame of the solids more than this alternate change of contraction and relaxation : hence it is we so often see so great a debility following after a stubborn quartan ague, and the many other evils subsequent upon it.

The wise *Hippocrates*, in his *Prognostics*, has deduced presages which have been approved of in all the ages which have passed since : he there directs us to consider well the *face* of the sick, whether it be like that of a person in health, but especially if it be like what it formerly was ; and says the worst state of it is, when it is diametrically opposite to an healthful countenance ; when the *nose is sharp,*

*sharp*, the *eyes hollow*, &c. describing that kind of countenance which has been since called by physicians the *facies hippocratica*. He compares the manner how his patients lie in bed with their usual custom of lying when in health, and so far condemns the former as it departs from the latter; so he condemns a quick answer from a man that had been of a cool temper before, &c.

All those appearances in a disease, where it is known to be different from a state of health, are called *symptoms*: now these are *individual* and *proper*, and constantly occur in every description of the same disease, and can never be separated from it: thus for instance, in a pleurisy, the *sharp pricking pain*, which is felt more violently upon drawing in the breath, attended with an *acute continual fever*—these are called *pathognomonic signs*: besides these, there are such as are common to this disease, with many others; thus, in a pleurisy, the pains of the head, loins, &c. which do also occur  
in

in a thousand other diseases, are therefore called common. Now all these are to be set down in their proper order, as they mutually succeed each other, otherwise the end of the description is lost: thus to say, that in the small-pox the patient was delirious, would be to say nothing from whence any certain presage could be formed; for there is a wide difference, whether the delirium comes on before or after the eruption. If physicians in former times had not observed this, how could they have foretold what would happen on the *seventh day*, from what appeared on the *fourth*?

*Hippocrates* says, “*Past things must be learnt, present known, and things future be foretold.*”

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DISEASES *of a simple solid Fibre,*  
*and a weak lax Fibre.*

**T**HE most simple fibre consists of very small parts adjoining to each other length ways; these parts, which are not divisible into less, are called the elements of the fibres.—It is a combination of the elementary particles, that constitutes a fibre. The solid parts of animals, after being deprived of all their more volatile parts by a chemical analysis, yield an earth.—Putrefaction shews this, which perfectly separates the earth from the other principles.—It is this earth which gives stability to these principles.—Bones calcined and made very brittle, if dipped in oil, will cohere again. A certain and determinate degree of cohesion is required in the fibres,

which if encreased or diminished will constitute a disease. We are always to consider whether the disease is to be left to nature, or whether any assistance is to be given by art.

If a pleuritic person in the first stage of the disease coughs up a mucous yellow matter streaked with blood, and finds relief in every symptom, we know from the faithful observations of the ancients, that if this expectoration can be kept up, he will be well in a few days; for which reason we are not to disturb this salutary attempt of nature, by bleeding, or any other remedy; but are only to throw in such very smooth decoctions as may serve to support this expurgation. But if, in a pleuritic patient, we observe a violent fever, a burning heat, or dry cough, attended with a dryness of the tongue, and no sign appears from whence we may learn that nature is aiming at any salutary change, we then know, that if things go on in the body as they do, either a mortal gangrene will follow, or if the disease  
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be of a milder nature, a suppuration; which is *always a good circumstance where the suppurated matter can be discharged outwardly*; there would be danger otherwise, that the purulent matter, when formed, would be discharged into the cavity of the thorax, and destroy the patient with a fatal *empyema*: here then we conclude that nature is not to be left to herself, but the disease is to be so changed by the powerful assistance of art, as to prevent either a suppuration or a gangrene.

Gentle friction presses the veins only, whereas a stronger presses also the arteries. By pressing the veins, it accelerates the motion of the venal blood towards the heart, and by this means the motion of the heart is quickened, and of course the blood is propelled with a greater velocity through all the vessels.

A weak man should not ride on a full stomach; but either before dinner, or after the digestion is finished.

The more a fibre is distended, the more it is weakened; whatever therefore

hinders the stretching out of the fibre, removes the cause which weakens it. Now bandages or cloths drawn tight to the body, supply the vessels with that support, which the solids were too weak to do; that is, they hinder the too great dilatation. The cure of some diseases should be promoted more by means of bandages than by all other methods whatsoever.

I remember I once had under my care a young lady of distinction the most violently relaxed in her nerves I had ever attended. The least noise, or the letting in upon her too strong a light, would immediately throw her into convulsions; the abdomen at the same time being drawn into a variety of strange motions, and feeling as if it were tearing asunder. Neither the ferulacious juices, nor the powerful virtue of *castor*, so serviceable in nervous complaints, were here of benefit; but when her legs, thighs, and the whole abdomen, were bound round with proper bandages, this troublesome disorder presently abated, and then by the use  
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of proper remedies she recovered. Thus she lived for several months, wrapped up like an Egyptian mummy, and by no means to her dissatisfaction, as she presently found so much relief from the application. We ought to use the utmost caution in giving fermented spirits; for they are capable of producing abundance of mischief, both as they inspissate the liquids, and contract the solids, if used imprudently. In the dead body of a woman addicted to dram-drinking, the spleen, pancreas, liver, lungs, were all found dry, scirrhus, and in a manner partly petrified; all the glands, internal and external, were become nearly as hard as stones.

Steel dissolved in the milder acids is commonly preferred to all others, because it acts not only by its austere astringent virtue, but because by the wonderful stimulus of its metallic sulphur, which is so friendly to our nature, it raises the vital powers.

24 *Diseases of weak and lax Viscera.*

The strength of the greater vessels arises from three causes— 1. From the strength of the fibres — 2. From the collapsed or compressed vessels growing together into membranes.— 3. From the vessels concreting with the liquids they have contained.

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*Diseases of weak and lax Viscera.*

**A** Viscus, or bowel, is commonly defined to be an organical part of the body, which by its structure very much changes the humours brought to it, and so as to make this change subservient to the life and health of the whole body.

There are two causes which produce the motion of our liquids through the canals. 1. The power of the heart distending the vessels by the blood impelled into them. 2. The strength and contractility of the vessels, which when the motion of the heart ceases, propel  
the

the blood that was thrown into them by the heart; when therefore this contractility of the vessels is deficient, the liquids stagnate.

*Hippocrates* observes, “that what is done by degrees is safe at all times, but especially when the transition is from any one state to a state quite different.” This general rule is more especially to be observed in the cure of weak vessels and viscera. Should any one in this case imprudently accelerate too much the motion of the humours, through the vessels, either by stimulating medicines, or an increase of the muscular motion, the too weak vessels and viscera would generally break, as unable to sustain the additional force; and, instead of relief, death would be the consequence, through the wretched mistake of the physician.

Exercise of different kinds are serviceable, because, 1. As the pendulous viscera receive strength from these agitations, (from swinging on a rope with a slow oscillatory motion, a litter, chaise, coach,

coach, or riding on horseback,) and the several concretions formed in the humours are partly broken by the concussions and partly by the encreased powers of the vessels and viscera. 2. As the remaining fæces of the last digestion are hereby discharged from the *primæ viæ* in such persons, as would otherwise retain them, through want of power in these viscera to discharge them; for which reason exercise is particularly adviseable, an hour or two before a meal: 3. As the force and efficacy of the air on the vessels of the lungs is hereby increased, and the surrounding atmosphere, which presently grows warm with the heat of the body, is continually renewed; which more especially is obtained by riding on horseback.



*Diseases of too strong and rigid Viscera.*

ALL the new liquids that pass into the body enter always by the veins, whether they are conveyed through the mouth in our meat and drink, or are drawn in by the absorbent vessels, which are spread over the whole surface of our body; as the veins easily dilate and admit them all. But when they have passed from these into the arteries, if these arteries are stronger than is required to health, the introduced liquids are presently carried off. For which reason we plainly see, why lean and strong men oftentimes eat more than twice as much as fat and idle men, and though they have but few stools, do notwithstanding not grow fat. The food they take indeed enter the lacteal veins, and is thence conveyed to the *vena cava*, and the right ventricle of the heart, but is so attenuated in passing through the pulmonary arteries, and afterwards through the  
whole

whole arterial system, as to be presently carried off by the perspiring vessels, and so vanishes into nothing. It is carefully to be observed, that though the power of the arteries be encreased, yet they do not therefore presently bring on a greater resistance to the heart than is requisite: for the strength of the heart encreases with that of the artery, as the influx of the venal blood into the cavities of the heart, the circulation of the arterial blood through its substance, the influx of the spirits into its muscular villi, are the causes upon which its muscular motion depends. But when the *aorta* contracts itself with greater force, it drives the blood more swiftly through the coronary arteries into the substance of the heart, whereby it applies the blood with more power to the *cerebrum* and *cerebellum* by the carotid and vertebral arteries; from whence follows a larger secretion of spirits; and consequently it encreases the velocity of the blood flowing from the arteries into the veins, and by this  
encreased

increased velocity occasions a greater irritation of the heart. So that all the causes of the muscular motion of the heart are increased by the strength of the arteries. While this equilibrium continues, the food is most perfectly and speedily converted into our nature; a great degree of solidity is given to the blood, and as yet no detriment done to health: but when the strength of the arteries increases so far as that they are scarcely to be dilated, then follows all the mischief.

There is but little hope of curing a confirmed polypus. There are many remedies cried up as effectual, but very seldom do good. All that can be hoped for is to dilute the blood, and so throw it into a state most remote from concretion; *i. e.* to introduce by art that cacochymy which consists in the blood's being too thin, to the end the polypus may not be increased by the opposition of new matter, but by degrees be worn away, by the constant attrition of the blood, which is every moment passing by it.

The blood of a healthy man always exceeds the density of water, and if it begin to degenerate into the thinness of water, his strength decays, as we see in hydropical patients.

Emollients are of the same class with lenients, except that these relate to the solids only,—lenients to both solids and fluids. Watery diluents resolve all mucous, glutinous, gummy, soapy concretions, and yet many others are not to be resolved by water; blood is not to be kept from coagulating by being put into warm water.

In the earliest part of life a man is most liable to all the diseases of the nervous kind; because, as we learn from observation, the brain and its productions, *i. e.* the *medulla spinalis*, and the nerves, are larger in proportion to the rest of the body the nearer a man is to his original. Add to this, that as the brain is less firm at that age, the nerves, which are produced from the brain, are softer and more easily affected, besides that  
that

that the integuments are thinner ; hence it is, that children are so apt to fall into convulsions, for a child can scarce have the slightest fever, but it is attended with a convulsion.

Another source of diseases in the tender age of children, is the quantity of humours being more than proportioned to the powers of the solids. In our infancy we are all disposed to be turgid and moist ; and from hence arises those easy and wonderful changes of the cutaneous humours, which so frequently show themselves, in a manner as yet not well understood. This appears in the ulcers of the head, the herpes, the excoriations behind the ears, the armpits, &c.

Afterward, about the time of puberty, the whole body suffers wonderful changes in both sexes ; in the male, tumours of the testicles, varicous inflations of the feminal vessels, which are easily cured by gentle friction, whilst exposed to the vapour of lighted amber, and at  
the

the same time giving lenient purges.—  
In the female, surprising diseases do  
often both precede and attend the first  
eruption of the menstruous flux.

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*Spontaneous Diseases from an acid Humour,  
and Diseases from a spontaneous Gluten.*

**A**N acid is foreign to the body ; for  
no animal humour, properly so  
called, ever grows acid of itself.

The cause why flatulency arises from  
an acid is twofold ; from the irritation,  
by which the fibres of the intestines be-  
ing drawn into a spasm, keep in the in-  
cluded air ; and from the elastic matter,  
which is generated in all liquids that are  
apt to ferment ; on both which occasions  
those who suffer under an acid are so sub-  
ject to flatulencies. Of all the humours  
that are not excrementitious, the bile is  
the most acrid, and soonest liable to pu-  
trefy ; and for this reason it is, that dead  
bodies soonest putrefy near the liver.

All

All persons that have a predominant acid look pale. This shews a deficiency of the most solid red part of the blood; and where this fails, the assimilation of the crude humours is never carried on so well as it ought to be, and they more easily degenerate into a spontaneous corruption. All sharp humours, when they arrive at the skin, will occasion itchings, obstructions between the scales of the skin, pustules, &c. In the jaundice the bile, when carried to the surface of the body, shall often raise an intolerable itching. If the humours, infected with an acid acrimony, flow to the same part, the same effect will be produced. By eating unripe and crabbed fruits, the children of country-people often labour under diseases of the skin, attended with a most violent itching. In the first stage of life infants are often afflicted with surprising erosions of the skin.

No animal tends to acidity of itself, but always to putrefaction.

A glutinous substance is, as it were, of a semiliquid nature, but has such a lentor in its parts, that when moved they, in a manner, still stick close together.

The internal surface of the windpipe and bronchial vessels is entirely overspread with a very smooth mucus, which covers and defends the nerves that are there dispersed, and are so apt to be affected by the least irritation; but in an healthy young person, that breathes well, and is active, this mucus is dissipated after it has done its office; or, collecting in a larger quantity after sleep, is easily thrown off by a little coughing and hawking. And yet in old men this mucus is gradually collected, and grows sluggish and viscid, and incapable of being thrown off by the weak action of their lungs and still weaker action of their sides; so that it occasions a *stertor* and hissing noise in the part of the lungs where the air is lodged, till at length, with much coughing and difficulty, it is brought up. From the constant supply of this mucus, arising  
from



from the diminution of the concoctive powers of the lungs, the greater dilatation of its vessels, and relaxation of the mucous cells, proceeds that asthmatick cough incident to old men. “Hoarseness  
“and colds in old men do not pass regu-  
“larly off,” says *Hippocrates*. For which reason, whatever is of use to attenuate this viscid mucous matter, and at the same time revive the languid powers, is in this case more particularly serviceable to old men. For such a collection of mucus is not only to be found in the lungs, but in the stomach and intestines, and even in the bladder; for which reason old men so frequently make a pituitous urine. Weak people, when dining upon mealy substances not well fermented, find themselves subject to a difficulty of breathing within a few hours after, from the viscid chyle’s passing with greater trouble thro’ the lungs.

All secretions are made from the blood :  
in order therefore that these be duly

performed, it is necessary that the blood should be good.

It is a vain attempt to cure a person labouring under a pituitous indisposition by food and physic, unless you can prevail upon him to cast off that sluggishness which is natural to this disease, and to use exercise even almost beyond his strength. And yet the motion must not be too violent at first, lest this mucous matter should be thereby thrown upon the lungs, which could not happen without very great danger: this often happens, when the glutinous matter collected in the winter is suddenly liquified by the heat of the spring; and, mixing with the blood, is stopped in its passage thro' the very minute vessels of the lungs, by which means the patient is suffocated at once; but the motion must be gentle in the beginning, and increased by degrees; and if the body is too weak to use exercise, friction should be substituted in its room.

*and, from a spontaneous Gluten.* 37

The effect of stimulents does not always depend upon the figure, weight, and stiffness of their particles; and it suffices, for the physician's purpose, that he knows what particulars, applied to the body, shall increase its motion, though he does not know the manner whereby they act.

Children whose bellies swell thro' these glutinous obstructions, are generally relieved by having them rubbed with rough cloths; this should be done in a morning after sleep, and fasting; for when the stomach is full, they cannot easily bear it.

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*The Diseases from a spontaneous alkaline Cause.*

OF all the liquids of the body in health, except such as are excrementitious, the *bile* is the most acrid, and soonest inclines to putrefaction.-----

When mixed with the chyle in the *duo-*  
D 3 *denum,*

*denum*, it impresses upon the food, what may be called the first character of humanity, and changes the acid or aciescent part of it into an opposite nature.-----If this bile either exceeds in quantity, or begins to putrefy, it brings on an universal corruption, and gives rise to the most acute putrefying diseases.

The want of motion in our fluids, or an excess of motion in them, will both produce putrefaction; and thus two directly opposite causes will produce the same effect.

Thirst is the constant attendant upon any putrid fomes in the human body. This appears evidently in hydropical persons, who are seldom thirsty in the beginning of the distemper, but as soon as the water begins to stagnate and corrupt, and to continue long in the body, then follows an unquenchable thirst. *Hippocrates*, for this reason, reckons the want of thirst a very promising symptom.

Every kind of acrimony may irritate the nerves dispersed through the intestines,

tines, from whence may follow their spasmodic contraction and inflammation; especially when, by the soapy virtue of the acrid bilious matter, the mucus is abraded that defends the very fine extremities of the nerves, which are spread over the internal coat of the intestines, and causes them to become much more sensible.

A cohesion in our humours seems necessary for the nourishment of the body; but this is destroyed by putrefaction. In diseases arising from some putrid matter lying in the body, all the humours are dissolved, nutrition fails, and the patient dies of a slow consumption. This is evident in phthifical cases, where the night-sweats, the colliquative and putrid diarrhœa, atrophy, and death, arise from the blood's being too much dissolved.

In very acute fevers the quick and difficult respiration, the very swift, and oftentimes unequal pulse, shew plainly that the *vital* functions are disordered; the extreme weakness, delirium, drow-

finess, &c. indicate the same in the *animal* functions; the lost appetite, the thirst, nausea, and vomiting, as plainly point out the disorder of the *natural* functions.

Whatever is acrid may cause an inflammation, either in the whole body, or in any particular part, by its stimulus.

The juice of ripe fruits needs no preparation; it allays thirst, cools, relaxes the belly and urinary passages, and affords the greatest relief, when the stomach suffers from a putrid bile. Wine itself is good in these diseases, *even in the most acute*, especially the acid sorts; but then they must be well diluted with water. Vinegar is reckoned by all, among the best prophylactic medicines to keep off the plague, as its smell is so reviving in all putrid diseases.

When there is either a dissolution of the humours from putridity, or there is reason to apprehend it coming on, the acid spirits drawn by fire from *sea salt, nitre,* and *vitriol*, will then be of the greatest service; these most powerfully resist all pu-  
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trefaction, at the same time not dissolving, but rather coagulating the humours. The spirit of sulphur *per Campanam*, as it is called, is singularly serviceable in this case, being the purest fossile acid, without any metalline substance intermixed with it.

Emulsions and decoctions, by reason of the water they contain, dilute, and by means of the soft oily gluten residing in them they inviscate whatever is acrid, and render it inactive; and therefore are given to advantage.

Medicated earths or boles resist all putrefaction by their latent acid, and are by their innocent mildness extremely demulcent; hence their excellency in putrid dysenteries, if given in a due dose.

They who die of a suppression of urine have all the functions of the brain first disordered, and at length go off quietly in a fatal sleep, though sometimes they are convulsed before the close of the last scene.

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The strongest broths are perfectly glutinous, and oppress a weak stomach without encreasing strength, but the thinner sorts afford a good nourishment. Calves feet given to phthifical people in decoctions or jellies, with a view to nourish them, frequently do injury, because they oppress their already weakened lungs with too tenacious a chyle.

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*Of the Diseases that arise solely from the excess of the circulatory Motion.*

**T**HERE scarce are any two liquids found so much alike as the serum of the blood and the white of an egg.

The blood of an healthful person is very prone to concretion, and this may be increased by the increase of heat: this blood thus coagulated is not easily solvable.

Whatever causes the venal blood to move more swiftly towards the heart, increases the motion of the heart; hence  
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it appears, how a very high fever may be raised by too violent muscular motion, or by violent frictions. Who can explain the nature of the stimulating power in a drop of variolous matter, applied in a fresh incision made by inoculation? or, who will point out to us the manner how sound humours changed by the variolous contagion, shall assume a poisonous nature, and, at the same time, acquire almost an infinite power of multiplying the poison?

An increased motion of the blood arises from the more frequent and violent contractions of the heart. The dilatation of the arteries must be increased in a proportion compounded of the increased strength and frequency of those contractions, the arteries, when they are distended, are in a violent state; and hence their sides endeavour to approach nearer to their axis, by their elasticity and muscular action, and so repress the distending blood; for, unless the arteries, by being

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ing contracted through their own spring, were to expel the blood which distends them, the heart would not be able, the next systole, to throw the blood contained in its cavities into the arteries that are already distended; the blood would consequently by degrees be accumulated within its cavities, and the circulation stopped. The stronger therefore the action of the heart is, which distends the arteries, the greater will be the power of that force by which the arteries endeavour to contract their cavities; and the oftener the heart is contracted in the same space of time, the more frequently will the contracted arteries re-act upon the blood that distends them. Heat arises from the attrition of the parts with each other, and the sides of the vessels. As soon as the blood is at rest, all heat ceases; which encreases again upon motion: this made *Hippocrates* observe, that “the blood is not hot by nature, but grows hot.”

The urine, which is the true lixivium of the blood, grows more acrid and fetid,

tid, as the circulation becomes more violent; the motion of the blood being increased, the salts of the blood become more acrid and volatile, and the oils thinner and less mild; these again will form a fresh stimulus to increase the circulation, from the increase whereof they deduced their origin. And thus the effect of a disease will increase the disease itself.

Health seems, in a great measure, to consist in every vessel's containing its own proportional liquid.

The quickness of the pulse shews, that the heart is contracted more frequent than it should be, in the same space of time; its hardness points out the fullness of the arteries, that the blood is very compact and dense, and that with difficulty it gains a passage through the minute vessels, by means of its inflammatory viscosity.

All the blood thrown out of the right ventricle of the heart, ought to pass through the lungs before it can return into  
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the left; but as the right ventricle would not suffice to propel all the blood thro' the narrow passages of the pulmonary artery, by its own muscular force alone, there is farther required, the concurring action of inspiration to dilate the lungs, and thereby open a free passage to the blood that is thrown from the heart. In proportion, therefore, as the right ventricle of the heart, in a given time, contracts oftener and stronger, so much the more frequent and strong the inspiration is required to be. Thus we see, that whenever the motion of the blood is increased by running, or any other violent exercise, the respiration increases in proportion, and is performed with greater difficulty. And thus, the respiration is greater, merely from an encrease of the velocity of the blood which passes thro' the lungs; but when, besides this, thro' the greater motion, the blood begins to assume an inflammatory spissitude, the respiration will then be much quicker and more difficult; for this ill quality in  
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the blood, of its not being able to circulate, first shows itself in the lungs; and, for this reason, in acute diseases of the inflammatory kind, a short and difficult respiration is reckoned a bad symptom.

A diminished circulation is always attended with a relaxation and fullness of the veins.

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*Diseases from a Defect of the Circulation,  
and of a Plethora.*

**T**HERE is no fermentation without air, and putrefaction comes on far more slowly when the air is excluded.

By a plethora is not meant every increase of the humours, but only an increase of the quantity of good blood.

If the viscera, whose office it is to change the aliment into chyle, be firm and strong, a large quantity of chyle is drawn from the food we take down. And if the heart and arteries be equally strong,

strong, this large quantity of chyle is converted into good blood; and as the veins are always naturally of a laxer nature, they will easily give way to the distending liquid, and admit this superfluous quantity, unless they are emptied by motion and exercise. For the less motion there is in the vessels, the more the humours are aggregated in the veins; whereas the greater the motion is, the more the arteries are filled, and the veins emptied. When hard drinkers pour down such vast quantities of liquor, they would be suffocated, if the veins were not capable of giving way and receiving the superfluous part of it; and therefore it is that these people have their veins so much inflated. If then much chyle and blood be formed in the several viscera set apart for this purpose, and the laxity of the veins at the same time be proportionably greater, the quantity of good blood must of necessity be accumulated.

Men used to frequent bleedings suffer the same inconveniencies at their accustomed

tomed times of bleeding, as women do by the retention of their menses, till at length they become quite as lax as women.

Rarefaction alone is capable of producing a plethora; for if the blood be rendered twice as rare as it was, it is the same thing with respect to the vessels, as if there were really twice the quantity of blood contained in them.

Medicine never cures diseases better than when it imitates nature.

Hard working people, though they eat voraciously, are seldom known to be plethoric, because labour carries off that which would otherwise be retained in a state of idleness, and gives such a firmness to the solids as not easily to yield to the filling liquors. Exercise should never be prescribed till the vessels are first emptied by bleeding; the vessels else, by being too much distended, would be apt to break.

*An Obstruction.*

**A**N obstruction seems chiefly to take place in the vessels, and very seldom or ever in the larger receivers.

This may arise from three causes; 1. Either that the liquid which is to pass is grown more viscid, while the capacity of the canal remains the same; 2. or, The canal is grown narrower whilst the liquid remains as it was; or, 3. The narrowness of the canal and the viscosity of the liquid are joined together.

The particles of all fluids cohere with a certain degree of force. Now, in order that the fluids may pass thro' the smallest extremities of our vessels, it is requisite, that they pass single and freed from their cohesion with the rest; the powers therefore that carry the humours thro' the vessels, must be able to overcome this cohesion. Should therefore the cohesion of the elementary particles be so encreased, as not to suffer themselves to be divided



vided from each other by the action of the heart and vessels, several of them will remain inspissated, which ought to have passed singly through the extremities of the vessels, and so form an obstruction.

All tumours must arise, either from the fluids distending the vessels beyond their natural bulk, or from their being extravasated, or from the vessels being concreted with their inspissated liquids. When the arteries and veins which are charged with red blood, are so distended by the quantity they contain, as to compress the smaller vessels that lie near them; they may do much mischief.—The effects of this kind of tumour are especially seen in the damage it does to the actions of the brain; for the cranium being always entirely full, and no red blood being any where to be found but in the *pia mater*, and the large red arteries dispersed through the medullary substance of the brain, and surrounding the *medulla oblongata*, the cortical sub-

stance naturally containing none, it follows, that when these red blood vessels are distended, as the hard boney part of the cranium cannot give way, the other vessels of the cortical substance and the medulla must be compressed; by which means, all the functions of the brain will be disordered, only the cerebellum, being much firmer than the cerebrum, will in this case be less affected.

Tumours attended with pain are called *phlegmones*; if without pain, and hard, *scirrhi*; if without pain, and soft, they are then properly called *oedemata*; which are applicable to tumours arising from the *membrana cellulosa* only. The matter of them is generally water, as in the anasarcaous dropsy; or some other more viscid pituitous liquid, as in a leucophlegmatia. Now the *membrana cellulosa*, which is the true seat of these tumours, surrounds all the vessels; the tumours arising thence are consequently capable of lessening the areas of the vessels, and frequently of producing very surprising dis-

diseases, which shall be entirely owing to this single cause.

Varices happen more particularly to women with child, and that more especially in the legs, because, when the womb is distended, and presses upon the iliac veins, it prevents the veins of the thighs and legs from discharging the blood they contain so expeditiously as they ought.

A callus is a membranous part, increased in bulk, attended with hardness and insensibility, arising from the vessels being concreted together, and chiefly by an external compression. Its proximate cause is the compression of the vessels, the expression of the liquid they contain, and the concretion of their sides.

The proximate cause of all obstructions is only one, which is always simple and the same; *i. e.* the greater bulk of the matter that is to be transmitted above the capacity of the canal that is to transmit.

There are two causes that distend the arteries, the force of the heart propelling the blood, and the quantity of blood already contained in the arteries; if the force of the heart be lessened, the whole circulation proceeds slowly; if the quantity of the distending liquid be diminished, the fault lies in inanition. But the capacity of all the vessels depends on two opposite causes, the force and quantity of the liquid which is moved in the vessel, and the contractile power of their sides, which resists the distending causes; as soon therefore, as the distended causes are lessened, the contractile powers will produce the same effect, or which is the same thing, the vessels will be made narrower. When the particles of our fluids lose their spherical figure, they must of consequence lose the possibility of an uniform transition through the vessels; for since by the motion of the heart and arteries, every particle of the blood has a different motion and situation every moment, it was requisite to make this motion uniform,

form, that they should be of such a figure as might enable them to pass thro' vessels in any situation; which is the case of a spherical figure only.

The density of the particles of the blood is always proportional to the power of the heart and arteries. The shape of the elementary particles of our fluids, so far as we can discern by the help of instruments, is spherical; and this is obvious, if we consider that the blood is thrown, by the great force of the heart, into a conical vessel, that is reciprocally dilated and contracted, and incurvated as soon as it comes from the heart; it is plain therefore, that no particle of blood can keep the same direction for two moments together; and consequently, that the particles must be continually striking against each other: so that if any angular part should stick out in any elementary particle, that point must sustain the rotation of all the rest; and therefore, will soon either be beat off, or smoothed down. Add to this, that the extremities of the arteries, if cut transversely,

have a circular section, and so may give their figure to such particles as are of a flexible nature.

The stronger a man is, the greater is the danger of concretion, if his blood be at rest in the vessels. And therefore, those faintings, which weakly girls are so subject to fall into upon every slight occasion, are seldom so dangerous, as their blood is in too dissolved a state, and scarce ever, or at least, very slowly concretes, though it remain unmoved. The serum of blood will turn to ice, when exposed to the twenty-eighth degree of cold marked in Fahrenheit's thermometer; so that it requires a greater degree of cold than water, and probably because it is enriched with salts.

If blood be taken away on the first day of the small-pox, it shall look well to the eye; if on the third or fourth, it shall be covered with an inflammatory crust, because the most liquid parts being carried off by the fever, and the thicker parts more closely compacted, the particles

ticles of blood begin to cohere more firmly together; for whilst there is a large quantity of thin liquid interposed between the thicker parts, the pressure of the vessels will not change their figure; but when this is carried off, the thicker parts of the blood becoming contiguous, will be forcibly compressed by the action of the vessels, lose their spherical figure, touch each other in many points, and run into concretions. For when the vessels are very strong, so as to compress their fluids with great force, the finest part will be carried off, and the thicker parts united by this compression.

All acids do not coagulate the blood, for the acidulous wines, juices of ripe acid fruits, vinegar, butter-milk, &c. rather dissolve it; but the fossil acids that are prepared from sea salt, nitre, &c. will coagulate it. Alum, and the various sorts of vitriol, produce the strongest coagulations.

Alcohol, applied to the bleeding mouths of divided vessels, puts a stop to the  
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most violent hæmorrhages, by coagulating the blood. The serum of the blood itself will presently become hard by pouring alcohol upon it. How dangerous therefore, is the excessive use of spirituous liquors!

No obstruction can be possibly formed in canals, through which, during the course of life, the liquids are carried by a perpetual motion, unless the direction of the motion be from a broader orifice to a narrower: that obstructions may arise in conical vessels, through which the liquids are moved in a direction, leading from the basis to the apex, is certain; for, the particles of the fluids arrive at a narrower section of the cone every moment; and that which easily passed at the basis, may easily stick in the extremities of this converging canal; and then the liquid behind will always press the unpassable mass, into a still narrower pass, and so increase the obstruction; but in the veins, where the direction of the motion tends from the apex of a conical canal, to its basis, an obstruction seems



seems not possible, unless by the external compression of the vessel; for whatever has passed the narrow orifice of its vertex, will easily pass the other sections of the canal, which are continually growing larger: and though the particles of the fluid be supposed to unite into still larger particles, yet as these are not supported by the diverging sides of the veins, they will easily be carried along by the impetus of the subsequent liquid.

In a peripneumony, it is a bad symptom if the blood drawn from a vein be too dilute, and scarce disposed to coagulate, because it shews, that the thinner parts only pass through the lungs, while the thick are accumulated.

It often happens, that acute inflammatory diseases of the head shall leave behind them an incurable deafness or blindness during life; the reason of which is probably this, that when the greater vessels were obstructed by the inflammation, the lesser one derived from them, being compressed and collapsed,  
were

were by this means grown together. When in an apoplexy the brain ceases to perform its functions, it is seldom cured; some defect or other of the functions always remaining, which for the most part proves incurable.

When the stomach is distended with a large quantity of meat and drink, and presses the descending trunk of the Aorta, the turgid face, the red eyes, the increased pulsations, and the quicker respiration, all shew the quantity of blood to be increased in the upper parts, and that it flows with greater celerity through the vessels; hence it is that we meet with so many instances of persons who have died of an apoplexy immediately after a full meal. If a confirmed scirrhus or a malignant cancer, that will not admit of extirpation, are the cause of an obstruction, he must be a bold man that in such a case will presume to promise a cure.

The passions of the mind are capable of very suddenly and very powerfully increasing the contractility of the solids,

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I have seen a woman in perfect health, who upon a sudden fright had a tumour immediately rise in her breast, which, tho' very properly treated, hardened into an irresoluble scirrhus. Warm water will soften the harder parts of the body: but when turned to vapour, will more effectually discharge this office; the joint of the elbow, grown immoveable from an obduration of the ligaments, was rendered intirely flexible, in two months, by being exposed for two hours every day to the vapour of warm water. Where this can be conveniently directed to the part, it is most undoubtedly to be preferred to all other methods. Warm water dropping from an higher situation on the part affected, has done wonders in topical diseases; chronical and stubborn tumours of the knee, have been often cured thereby.

Bleeding often is useful in obstructions arising from the encreased contraction of the fibres; for thus emptying the large vessels, the lesser vessels which form their sides are less compressed, and the force by

which the liquid is impelled against the obstructed place is diminished; and in case the quantity of blood taken away be large, so as to endanger swooning, the pressure of the vital liquid from the basis of the vessel to the vertex being by this means removed, the smaller vessels will be enabled to contract and repel the liquid which obstructs them in the larger vessels. A callus, if pared off from the skin, will grow again, although no vital liquid flow through it: and this seems to arise from the concreted extremities of the vessels being gradually protruded by the vital liquid; as also because the open extremities of the vessels that are next the callus are compressed by it.

Animal motion encreases the velocity of the circulation, and renders the solid parts more firm.

Frictions are of great use in resolving obstructions. I have seen an indurated parotid gland, after many good applications have failed, resolved by being well rubbed with woolen cloths for an hour  
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together, twice a day, after having been exposed to the vapour of warm water and vinegar. The same has been effected in the glands of the neck, which have been strumous.

Muscular motion also is of singular service in this case; as the motion of the venal blood being accelerated thereby, it occasions the heart to contract oftner and stronger, increases the circulation, and more frequently distends and contracts the vessels alternatively in a given time.

Sea-salt, sal gem. sal ammoniac. being much alike in many of their qualities, have also a resembling power of attenuating. The two former, when given inwardly, mix indeed with our humours, but pass off by urine in a great measure unchanged; for which reason, though they pass through most of the vessels of the body, yet they undergo no alteration from their action. Now whatever is taken down, and cannot be changed by the powers of the body, will constantly ex-  
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cite a greater motion, and thus will act also as stimulants.

But sal ammoniac. which is lighter than the other two, and more like the native salts of the blood, is more capable of being changed by the power of the body, and of a very penetrating nature; and is therefore generally preferred before the rest, and justly commended as one of the greatest deobstruents both in acute and chronical diseases.

The action of these salts seems to consist in this, that when they are mixed with the humours, dissolved, and conveyed to the obstructed places, from a kind of constant attrition by the action of the vessel against the obstructing mass, they divide it by their weight and figure, and thereby make it passable through the vessels; at the same time encreasing the action of the vessels by their stimulating property.

When the vessels under the unbroken skin are ruptured by a contusion, and the blood concreted into a mass, which is  
still

still entire, these salts dissolved in water, and applied to the part, will most happily dissolve it. Those who indulge themselves too much in eating large quantities of sea-salt, shall have their blood so dissolved, that it can scarce be retained in its vessels; hence oftentimes will arise very violent hæmorrhages, partly from the blood's too great dissolution, and partly from the too great acrimony of the humours which erodes the vessels.

The modern nitre seems quite different from that of the antients; for there it appears to have been of an alkaline nature, or perhaps, it was the sal ammoniac. to which they gave this name.

Modern nitre is of a nature strangely ambiguous, between vegetable, animal, and fossile. If free from sea-salt, it remains dry in the air, dissolves entirely in water, and is the lightest of salts, is a very great attenuant, and of great use where there are obstructions from an inflammatory density in the blood.

Borax is a very wonderful salt, whose nature is not well known; and its history confused, even in the best writers.

It is commended much as a deobstruent, and used in the most obstinate diseases, as it acts partly by its wonderful stimulus, and partly by its attenuant saline power.

All soaps contain an oil so accurately mixed with a salt, as to be capable of being dissolved in water without separation; the more subtle the oil and the salt are, of so much the more excellent use is the soap which is made from them.

Pills of foot gilt over, to prevent their giving offence, in viscid diseases, have often done great service, from their soapy attenuant nature.

That bile has a dissolving power is most evident in those diseases where, by being hindered from passing in its usual course, it regurgitates backward into the blood, for then it turns it all to water; and for this reason it is, that obinate jaundices are almost constantly followed by a dropsy.

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The bile kept inspissated in the shops in form of an extract, is give pills; if this inspissated bile be rubbed on the swollen bellies of children, it will dissolve the concretions formed in the intestines, and carry them off by stool.

It is sufficient if a physician knows the effects of quick-silver, when applied to the body, though he be not acquainted with its particular *modus operandi*.

The virtue of other remedies is no less obscure to the enquirer. Who has ever explained the manner by which scammony carries off the blood by stool, after it is converted into a putrid water? Whoever has thoroughly understood the wonderful properties of antimony, and its several preparations?

Bleeding will succeed better in a pleurisy, if the side affected be gently rubbed at the same time that the blood is flowing from the vein; or if the patient move the affected part, by frequently drawing in his breath as hard as he can, or by coughing.

Inflammatory diseases are more easily cured in men of lax habits, than in strong men who have been accustomed to hard labour.

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*Of Wounds in general.*

**I**F the orifice of a wound be of the same size with the instrument which inflicted it, it is a sign that it was thrust straight forwards in the wound; but if a broad sword makes a round orifice, it is a sign the weapon was turned round in the wound.

When the aponeurosis arising from the tendon of the biceps muscle in the arm is accidentally injured in opening a vein, the severe symptoms which follow do not result from the slight wound or puncture in the part, but from its tenacity and connection with adjacent parts.

Wounds are more or less dangerous from their situation; for if a small branch of one of the intercostal arteries, for example,

ample, be wounded, so that the pleura is perforated at the same time, the extravasated blood will then escape into the cavity of the thorax, and be productive of much mischief. Thus also a wound is much more dangerous when inflicted in the interior, than in the exterior part of the thigh, because of the great blood-vessels which are seated in the former.

A slight fever happening in the inflammatory state of wounds, does not often prove hurtful, but is rather serviceable, by forwarding the formation of *pus*, or matter, in the wound; and when the pus is formed, the fever generally vanishes. When this slight fever arises about this time, after cutting for the stone, amputating of breasts, or in the like wounds, it is always a good presage.

Pus is never formed in wounds, unless they are secured from air, either by the natural crust formed on the surface of wounds, or by plaisters and dressings, &c. so that the matter is not formed

within, but out of the vessels in the cavity of the wound, from the juices there extravasated, digested and changed by the heat of the body. For if all the matter be cleansed from the surface of a wound with soft-scraped lint, within an hour after it will appear all over beset with a thin liquor, instead of matter; but when the wound has been covered with a plaister for four and twenty hours, upon removing the dressings, plenty of matter appears.

A gangrene is termed that affection of the soft parts, in which they tend to death or mortification, from a deprivation of the vital influx and efflux of the juices by the arteries and veins. If a gangrene therefore follows the total division of a large nerve, it must hinder that vital influx and efflux of the juices: yet we know the arteries and veins are here entire, and their contained juices in a healthy state, and the nerves only appear divided; but if we again consider that the motion of the arterial fluid  
results

results from two causes, i. e. the force of the heart, and the action of the arteries; and also remark, that the force of the heart is spent chiefly in dilating the arteries, it will thence follow, that the principal cause moving the fluids in the arteries, must be their contraction, which is performed partly by their elasticity, but principally by the action of their round muscular fibres, by which the dilated arteries are again contracted; but we know from physiology, that the action of a muscle, or muscular fibres, requires that the nerve thereto belonging be sound or entire: and as we know that the nervous trunks give branches to the adjacent arteries, it is thence evident that the nerve being wounded or destroyed, the muscular force of the artery propelling the contained juices, must also perish; so that the blood will move it in such an artery only by its remaining elasticity, and the impetus received from the heart. In the veins again the blood goes on with

the velocity which it had in passing into them out of the arteries, which is again accelerated by the motions of the adjacent muscles, swelling in their contractions, and pressing the adjacent veins, so as to promote the course of their contained blood; but the nerves being divided, the subjacent muscles become paralytic, and lose all their power of motion. Thus the impetus of the blood being diminished, in passing from the arteries through the veins, for want of the protrusive action of the adjacent muscles, it will therefore stagnate, or move slower in the veins, and be there accumulated; from whence again will arise a greater resistance to the arteries, whose muscular contraction is now much weakened: from which causes the vital motion of the juices through the arteries and veins into the parts below the wounded nerve, will at length be totally destroyed; that is, a gangrene will be the consequence.

If, on the pricking an aponeurosis of the biceps muscle in bleeding, long red spots

spots appear externally in the skin, it is almost constantly reckoned one of the very worst signs.

There is not a better remedy in the puncture of a nerve or tendon, than the black *Balsamum Peruvianum*, made a little warm, and then dropped into the wound.

Wounds should be washed with warm water mixed with a little honey, wine, and sea-salt; that, by removing all the clots of blood, the whole surface of the wound may be clearly viewed, and the hæmorrhage be restrained, which may easily be done in the extremities or limbs, by compressing the trunks of the vessels with the tourniquet, or a proper ligature. In other parts of the body, if the injured vessels are not very large, the hæmorrhage may be restrained with warm alcohol vini.

If a great weakness of the vital functions immediately ensues, after a wound that has penetrated into the cavity of the abdomen, attended with a swift palpitation

tion of the heart, a small, quick, and unequal pulse, paleness of the face and lips, and coldness of the extremities, we may then conclude, that a large quantity of blood is extravasated into the cavity of the abdomen, from a wound in some of the larger vessels. If a wound be inflicted in the neck, without any considerable hæmorrhage, and afterwards is attended with symptoms like the preceding, there is then reason to fear that the recurrent nerves are injured, as they descend through this part, to their distribution in the vital organs. If the like symptoms follow a wound of the head, there is reason to believe that the cerebellum is injured or compressed by the extravasated juice; or if a wound of the head is followed with a loss of all animal actions, we have then great cause to apprehend, that the brain itself is in like manner hurt. If again we observe, after a wound has been received in the back, that all the parts below the wound are deprived of sense and motion, we  
may



may then reasonably conclude the Medulla Spinalis to be injured.

If blood be discharged of a scarlet or frothy colour, either by the mouth, or from the orifice of a wound of the thorax, we may know thence that some pulmonary vessels are divided. But if after a wound of the abdomen, any of the chyle is discharged from thence, it denotes that the small intestines have been injured; but if any of the fæces come out, it plainly indicates the great intestines have been wounded. If any blood comes away with the urine, we are then to conclude that the kidneys, ureters, or bladder have received injury.

If the spinal medulla be wounded pretty deeply in its upper part, its soft substance will be destroyed, and the action of the brain and cerebellum will be abolished from the parts below, at least so far as they were dependent on the continuity of the medullary fibres wounded; for the eighth pair of nerves, the  
*par*

*par vagum*, with the intercostal, arise much higher from the medulla oblongata within the cranium; and their branches go to most of the vital viscera. Hence then a person does not die hastily after such a wound, though he will inevitably perish sooner or later, according as the medulla was more deeply wounded, or in a higher part; the reason of which is very evident, for the brain and cerebellum secrete from the arterial blood, that very subtile liquor which is afterwards continually sent to all parts of the body, by the medullary fibres of the encephalon continued through the nerves; so that if the quantity of blood brought to the secretory organ remained the same, then the number of the canals, which ought to contain and carry the secreted liquor to the respective parts, will be disturbed, and at length destroy the actions of the secretory organ itself; but it generally happens that large blood-vessels are injured, at the same time that the medulla spinalis is wounded; whence  
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the extravasated juices having first filled the cavity of the vertebræ, easily re-ascend afterwards into the cavity of the cranium.

The divided lips of a wound will form a larger hiatus, the stronger the cohesion of the parts was before.

An aneurism proceeds from whatever cause which destroys the cohesion, or diminishes the force of the coats of an artery in any part.

An aneurism may be known and distinguished from other tumours, by its manifest pulsation sensible to the touch; and when the tumour disappears, or greatly diminishes by a slight pressure, it returns again when the pressure is removed. Again, in compressing an aneurism, especially one that is large and near the heart, the patient will be in great danger of suffocation, unless it be done very gently and gradually; for the concremented blood returned out of the sacculus of the aneurism gives so great a resistance to the blood in the aorta from the heart, as to destroy the motion of this last very suddenly:

suddenly : or, if a large aneurism be compressed by the hand, the pressure must not be taken off all at once, but by degrees, otherwise the patient faints, from the sudden return of the blood into the cavity of the sacculus; and therefore the patient always complains of an intolerable anguish or oppression in the thorax, when a large aneurism is thus compressed. But when any aneurism lies concealed in any of the viscera, or more internal parts, it is much more difficult to discover ; but if the known causes of an aneurism have preceded, the patient perceives an unusual pulsation, the heart palpitates, or is disturbed in its motion, and suffocation almost follows, from quickening the blood's motion, either by exercise or any other cause ; these circumstances will give us room to suspect an aneurism in some internal part of the body.

As aneurisms in the internal parts of the body are inaccessible to the hand, there are but small hopes of a cure : all that can be done for the patient, is to abate  
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the impetus and velocity of the blood's circulation, by a thin diet, and repeated phlebotomy; by which the aneurism may be prevented from encreasing as much as possible, provided the patient be ordered to refrain from all emotions both of body and mind. When the aneurism is accessible to the hand, and not yet encreased to any formidable size, there may be some hopes of relieving it by a prudent compressure; in making which it will be also of no small service to keep a moderate pressure upon the artery above the aneurism, to abate the impetus of the blood, and prevent it from easily regurgitating back towards the heart. When we can hope for little or no benefit by compressure, or when it has proved ineffectual, there then only remains the operation of extirpating the aneurism, the safety and success of which we are taught by experience.

Every thing which encreases the resistance to the blood's motion from the heart, may occasion a preternatural enlargement

largement of its ventricles : such as too great a redundance of juices in those who are plethoric ; a too great velocity of the blood in acute diseases, or an obstruction of its passage through the arteries, from an inflammatory disposition, or from polypous or atrabilious matter, &c. a defect in the arteries, through which the blood's free course is impeded, as when they become too tough or callous, or degenerate into a cartilaginous, aneurismatic, or bony substance, &c. all which constitute the principal causes from whence the cavities of the heart are usually dilated beyond their natural dimensions. The heart, though that is a rare case, has been found greatly distended in its cavities by air.

That this disorder is either present, or at least to be feared, may be known from the violent palpitations of the heart, attended with the signs which denote that the free course of the blood is obstructed through the lungs ; especially if the pulse be full and hard, with an intolerable anguish,

guish, increasing upon exercise; for we may then reasonably conclude that some obstruction is about the aorta.

It is of the utmost consequence to distinguish the true from the spurious aneurism; the signs therefore of this last ought to be particularly known. A spurious aneurism may arise from any cause destroying the continuity of the sides of the artery, the skin at the same time remaining entire, or at least so closed, that the blood cannot have a free passage through it from the wound, whence it is accumulated and distends the cellular membrane. It is partly discovered by this means, more especially from violent contusions, and from the sudden formation and encrease of the tumour, which happens much slower in the true aneurism. The tumour here is also more irregular, or not so distinctly limited or circumscribed, because the blood spreads all ways in the cellular membrane; whereas in the true aneurism the tumour is limited by the dilated coats of the artery. Add to this,

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that

in the true aneurism there is always a manifest pulsation corresponding to that of the artery, especially towards its first formation before it has obtained a formidable bulk; but in the spurious aneurism, the pulsation is less sensible, though this circumstance is not altogether to be depended upon. In a true aneurism that is not very large, the tumour wholly disappears by compressure from the distending blood returning into the artery: but then this does not happen in the spurious aneurism; for that being pressed in any part yields, indeed, but then the tumour encreases in the adjacent parts. Lastly, the colour of the skin is seldom or never altered in the true aneurism, at least in the beginning of it; but in the spurious aneurism, the blood, being extravasated under the skin, makes it appear of a black, livid, or other preternatural colour.

Every visible nerve which is wounded suffers not only as it is a nerve, but also as it is a composition of membranes and vessels of all orders, whose continuity



ity and action are also injured by the wound.

The utmost caution is required in dangerous wounds, to determine whether heterogeneous bodies ought to be extracted or left in the parts. If from duly considering all the circumstances, it shall appear that the patient may live the longer or the easier by their removal, it ought doubtless to be done; but if, from an anatomical knowledge of the parts and their functions injured, the nature of the wound appears to be such, that a removal of the bodies will threaten a certain or speedy death, they ought then deservedly to remain; since desperate cases are best let alone, lest any blame of the patient's death should be imputed to the physician or surgeon. If the surface of a wound appears dry, and of a deep red colour, affording very little matter, the surgeon may conclude the wounded vessels resist too much the impulse of the juices, and deny them a passage. But if every part of the wound

appears equally moist, and moderately red, the bottom of it rising gradually every day, and the sides encreasing all round towards the centre; these shew that the vessels are lax enough to admit the impelled juices, and be thereby elongated. Yet if the wound discharge a great deal of moisture, and fills up unequally round the sides, it is a sign the vessels are too lax; and therefore require to be treated with contrary medicines. Our aliments do not nourish, till they have been first changed from their own nature into that of animal juices, by the structure and action of the proper parts.

We should be careful not to let a wounded patient want drink, since thirst denotes a dryness of the body, and that the juices are either gross and impervious, or mixed with acrid particles, all which must be highly pernicious to the wound, since it requires to be supplied equally in every point, with mild or tasteless, and pervious juices; a moist  
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and cooling diet therefore is here necessary, to dilute the juices, open the vessels, and render them easily pervious; also to discharge the acrimonious and offensive parts of the blood, in the form of urine and sweat.

Diet ought to be proportioned to the course of life. An expert surgeon will presently observe a change in the condition of a wound for the worse, after a patient has eat fat substances, such as bacon, or pork, &c. for this oily matter, being carried to the wound, obstructs the smallest vessels, and becoming rank or acrid by standing, excites an inflammation not easily to be removed.

Want of fresh air is remarkably hurtful to those who are wounded in the head.

It is an observation of *Sanctorius*, and all others who have wrote *de Statica Medicina*, that joy causes perspiration, and renders the body light. *Balsams*, especially the natural balsams, all retain a thick adhesive quality, with a mild aromatick

joined with an acid, both which resist putrefaction, and at the same time are not offensive by their acrimony, because enclosed in a soft oil. This we know from a chemical analysis, which procures an acid liquor, with a thin, fragrant, and aromattick oil, from all natural balsams; while the thick resinous part remains behind, in the bottom of the retort. When these balsams are gently warmed, and applied in a moderate quantity, so that they may spread equally over the whole surface of the wound, they not only cover and defend the extremities of the tender vessels, so as perfectly to exclude the air, and prevent the parts from drying, but they also preserve the extravasated juices from putrefying.

*Nature herself is the only real sarscotick.*

It is highly necessary to be well acquainted with the situation of the parts when in a state of rest, especially during the time of sleep; for at that time all voluntary motion ceases, and the parts of  
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the body, being left to themselves, assume the most easy and natural figure. We then observe, that none of the limbs are extended, but that all of them are a little inflected : so that in a healthy person sleeping, the fingers are never stretched out, nor does the leg form a right line with the thigh ; all these joints make obtuse angles : for the muscles, bending the limbs, are generally found stronger than the extensors ; so that when neither of them are in action, the natural contractile power in the fibres of the flexor muscles will overcome that of the extensors, so as to make the limbs always appear in a posture somewhat inflected during sleep or rest. What has been said is also very apparent in palsies of the limbs, when all the voluntary actions of the muscles cease ; so that when, for example, the whole arm is become paralytick, the fingers are always found and continue inflected, insomuch that it is often impossible to extend them after the palsy is cured, from a rigidity of the

connecting ligaments in the joints, and from a contraction of the tendons of the flexor muscles, which shrink by their own natural contraction, and for want of being stretched or elongated by the action of the extensors : thus the flexor tendons become shortened, so that the extensor muscles cannot overcome their resistance. “ The  
“ patient, says *Hippocrates*, ought to be  
“ found by the physician lying down on  
“ his left or right side, with his arm,  
“ neck, and legs, a little inflected, and  
“ his body even with the floor, for in  
“ that manner lye most people in health.”

When this circumstance is neglected in the care of wounds, the parts grow together in a different manner from what they naturally were in before, and frequently a great deformity arises from the distortion of the parts, or a deprivation of their natural motion. This caution must be duly regarded at the first dressing of the wounded parts, which, being fresh, speedily unite ; so that it will be difficult to correct the mistake once committed, unless

less by laying them open again, after they have united. Causticks, stypticks, or astringent applications should be avoided, when we intend a handsome cicatrix; because those remedies either destroy the living vessels, or so contract them, as to render them incapable of transmitting their fluids, and the dead, or obstructed extremities of the vessels will suppurate, whence follows a loss of substance, a consumption of the fat, and a more or less deep and unsightly scar. It is also hence evident how much an equable compression may contribute to the neatness and uniformity of a cicatrix, by preventing the too great distention and protuberance of the vessels,

*Of Hæmorrhage, Pain, and Convulsions.*

**T**HE word hæmorrhage literally and originally means, a large and forcible flux of blood, though it is understood now of any discharge of blood from any part. When occurring alone in *Hippocrates*, without any mention of the part of the body, it then only means a bleeding from the nose.

Hæmorrhages are restrained either by contracting the orifices of the divided vessels, or by coagulating the blood, or by both together, so as to obstruct its course.

A gangrene follows upon pain, more especially when a violent fever and inflammation are present at the same time; for then the impetus of the circulating juices being increased, speedily destroys the parts.

When a phlegmon or inflammatory tumour has distended the skin and subjacent *panniculus adiposus*, so as to distract



distract the cutaneous nerves, and excite severe pain, even when it cannot be discussed, but tends to suppuration, so as not only to continue but encrease the distracting cause; in this case, the constant application of an emollient cataplasm will so relax the nervous fibres as to ease the pain, so that they are either more easily ruptured, or else continue to be distracted without danger of breaking. Thus all soft expressed oils, taken in large quantities, happily relieve iliac, colick, and nephritick pains. The vapours of hot water, and every thing that mollifies and relaxes, are therefore used with success in all pains. When intense pains arise from the puncture of a nerve, the most expert surgeons foment the parts day and night with the most emollient medicines. Hence all emollient and relaxing substances afford an universal remedy for easing all pains, because they remove the proximate cause of pain in the nervous fibres, viz. their danger of breaking; whereas all other applica-  
tions

tions act only upon the remote causes of pain. Even when the particular cause of the pain is unknown, these remedies may be always safely and successfully used: and they have also this advantage, that while they remove many of the remote causes of pain, they do not increase those causes of it which are not removable. When they have relaxed the vessels, the distending and impervious juices will then have a ready passage, and its acrimony will be at the same time obtruded. But every thing which augments the strength and contractile power of the solids, while the distending cause continues to act upon the fibres, will always increase the pain. Hence pleurifies are observed much feverer in strong and laborious people, than in those of a more lax and weak habit. Luxations are also reduced with much more ease, and with less pain in these last, than in persons of a robust habit, and even in some, the ligaments are so easily elongated, that their limbs may be disjoined without any pain.

When

When executioners have violently extended almost all the limbs of criminals by way of torture, they know that by pouring cold water upon them, the pain becomes still much more intense: whenever therefore, the action of laxative and emollient remedies can reach the seat of the pain, they will always have the desired effect. If, for example, a stretched nervous fibre becomes painful in the middle of a tooth, that pain cannot easily be relieved by emollients; and the same is true, when intolerable pains arise from an affection of the medulla of the bones; and also in the worst species of the paronychia, where the seat of the pain is in the tendons of the flexor muscles of the fingers, confined by their cartilaginous capsules. It may also sometimes happen, that though the pain is very severe, yet the use of relaxing and emollient remedies, may be prohibited by the other symptoms: thus emollients would be pernicious in a latent or ulcerated cancer attended with extreme pain, because they  
would

would greatly augment the putrefaction, and the fungous excrescence which attends the disorder. But in almost all other cases, the emollient and relaxing remedies are of universal service for easing pains.

All pain supposes life residing in the part; and if the pain arises from some impervious humour distending the obstructed vessels, it will always be the more severe, as the *vis vitæ* is more powerful and active. Hence in pleuritick fevers the pain is almost intolerable, because the fluids are violently urged into the obstructed parts, and by dilating the vessels, they very forcibly distract the nervous fibres composing the coats of those vessels: every thing therefore which abates the impetus and velocity of the circulating juice will ease pain.

Every convulsion is a disorder of some muscles; and is at present used to signify a violent, involuntary, and alternately repeated contraction of a muscle.

*Of Wounds in the Head.*

**A** Vertigo, noise in the ears, bilious vomiting, sleepiness, a depravation or abolition of some or all of the senses, &c. in wounds of the head, are always of bad import.

The symptoms which appear soon after the infliction of a wound are less to be feared than those which happen afterwards, or continue a long time, whether they are fevers or other symptoms.

If the wound be slight, but attended with contusion, many bad consequences are to be apprehended; for we may say a part of the body is contused, when many of its small vessels have been broke or destroyed by the violent pressure of some obtuse instrument; and therefore contusion is always joined with a laceration of the vessels, and extravasation of their contained humours, and a consequent corruption of them from their stagnation. Since the hard bones of the  
skull

skull are placed beneath the integuments of the head, unless the wounding instrument was sharp, it must always occasion some degree of contusion; more for this reason in the head than in other parts of the body. But since the skin of the head is very thick, and the subjacent *panniculus adiposus* very thin and easily dilatable, being resisted beneath by the hard bones, it is evident that extravasated juices corrupted by their stagnation will easily force themselves a passage through the non-resisting *panniculus adiposus*, and descend by their weight. And thus they may press to the back part of the head, and there irritate the large muscles, which are inserted into the os occipitis, so as to excite malignant symptoms. In the same manner the corrupted juices may also descend to the temporal muscles, and to the forehead and eyes, and there produce the like bad consequences. That the extravasated juices may thus easily pervade the cellular membrane, is evident from incontestable observation; for when a contusion in the  
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vertex of the head has escaped unobserved ; on the next day, the forehead and eyelids themselves have been often found swelled and livid, from the extravasated blood filtrating through the cellular membrane to those parts ; and therefore *Hippocrates* justly condemns wounds of the head inflicted by blunt instruments. “ They  
“ contuse, lacerate, and corrupt the soft  
“ parts. And besides that, wounds of  
“ this kind are rendered more purulent  
“ and moist, and are sinuous about the  
“ sides, and in some measure all round,  
“ and they take up more time in deterg-  
“ ing and healing them ; for contused  
“ and lacerated flesh must of necessity  
“ turn into matter, and be therefore con-  
“ fumed.” Another bad consequence to be feared from such wounds is a contusion of the periosteum, or the bone itself, or its being injured, by the extravasated humours ; from whence a caries of the bone, and its usual bad consequence, may be expected : for a bone of the cranium may be contused,

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and at the same time seem to be in its natural state; and the contusion may extend more or less into the substance of the bone, though the degree of injury cannot be judged of by the eye, as *Hippocrates* himself prudently observes. From whence it is evident, how deservedly contused wounds of the head are suspected by prudent surgeons; since the most malignant consequences may follow a long time after, when every thing is believed to be well. Among the many observations which confirm this, we shall only bring one instance cited by *Bobnius* from *Paw*. A certain person drinking in company with another, was struck by his companion with a pewter-pot over the right parietal bone, nor could any fissure be perceived in the bone: he walked, and was seemingly very well; till ten months afterwards he was taken with a vertigo in walking, and expired in a little time. Upon opening the cranium in the affected part, the bone and the dura mater were found perfectly rotten and fetid.

An



An erysipelas is a superficial inflammation, almost constantly restrained to the skin, of a reddish yellow colour, seated chiefly in the smaller vessels, which are less than those that convey blood, occurring in no part more frequently than in the head and face, and almost constantly denotes something malignant in injuries of the head.

It is remarkable that the cellular membrane is more easily distended, as it is thinner and less replete with fat; whence it is that this membrane about the eyelids is so easily inflated, and that about the scrotum and penis it is so easily distended to an uncommon bulk in an *anasarca*, because in those parts the cellular membrane contains no thick fat, but, if any thing, a sort of mucilage; except in castrated animals, in which a vast quantity of fat is accumulated in this membrane. Tumours thus formed are properly enough termed *emphysemata* or inflations, which *Gorræus* defines to be a collection of a flatulent spirit or air in

some void space of the body.—Wounds of the head should never be thought trivial, even though they appear but slight, since they have very frequently been attended with fatal consequences.

Wounds of the head should be seldom and then expeditiously dressed: for the whole intention here is to re-unite the divided integuments as soon as possible; and this is done by self-sufficient nature only, art barely removing the impediments and assisting her action. When all the symptoms therefore denote that the cure goes on well, of what service will it be to undress the wound frequently, and expose the tender growing vessels to the injurious contact of the air? And besides, that vain shew of diligence by frequent cleansing and wiping the wound with lint, abrades what last grew up. It will be therefore sufficient to dress the wound seldom; for if any thing is amiss, or if there is so much matter as requires to be cleansed, it may be perceived by the heat and slight itching that will affect the parts:

parts: and the smell will easily discover whether any thing of putrefaction is confined; or if any malignant symptom arises, it will indicate what more is to be feared or done: *the seldom dressing of wounds in the head cannot be too often inculcated.*

Whenever a contusion, joined with a wound of the head, requires the use of fomentations, we should always use wine, lest a liquor altogether watery should too much relax the parts. For the same reason too, all oily or fat substances are to be avoided in wounds of the head, since they offend not only by over-relaxing, but also, by their rancour and tenacity, they obstruct the small vessels, and render them imperspirable.

A contusion supposes a rupture of many vessels, and an extravasation of their humours, which being afterwards collected in the cellular membrane, often occasion very surprising tumours: and unless the wounding instrument was very sharp, wounds of the head are almost constantly

attended with some degree of contusion. It is therefore necessary here for the extravasated juices to be either discharged, or else disposed to be absorbed again by the vessels; and the ruptured vessels are to be restored to their former continuity. If now the contusion is light, and the extravasated humours are still pervious, they may be then safely dispersed; which may be happily procured by fomenting the parts with such remedies as dilute and attenuate the animal juices, and at the same time prevent their putrefaction, without over-relaxing the solids. The urine of a healthy man, with the addition of a little sea-salt or sal ammoniacum, and some wine, composes an admirable remedy for this purpose; with which the tumours arising from contusions in the heads of children are very frequently and successfully dispersed. The like fomentations are also prepared from rue, scordium, and the like plants, which have a particular antiseptick quality, and prevent putrefaction, at the same time that they  
powerfully

powerfully attenuate or dissolve such juices as are concreted.

Where the dilating a wound be necessary, the knife is far preferable to sponge, &c. which is generally pernicious, by obstructing the mouth of the wound for some hours, so that nothing can be discharged; whence an emphysema and other tumours are frequently formed: besides, they encrease the contusion and inflammation in the lips of the wound, which will require the suppuration to be continued longer before the wound can be healed.

When new dressings are to be applied, it should be done as expeditiously as possible; first, let the matter be cleared away with soft pledgets of lint, then apply your dressings, and cover up the wound; for a too long or exact inspection of these wounds, as also an imprudent or exact and rough handling of them, abrades the soft mucus, of which are formed the small growing vessels. It will be still more serviceable, if before the wound is

undressed, you place a small tile on each side of it, with some live coals, upon which sprinkle some mastich, amber, olibanum, or the like fumigating substances; thus will the warm atmosphere, full of grateful and corroborating aromatic fumes, cherish and comfort the wound on all sides.

A fracture of the skull differs from a fissure, because in this last the continuity or cohesion of the bone still continues in some measure; but a fracture supposes an entire separation of the parts.

In order to discover a latent, narrow, hair-like fissure, *Ægineta* proposes some liquid black medicine, or ink. But the antients used the juice of the cuttlefish, and perhaps other liquors, for ink; at least the ink which is now in common use, seems not so proper for this purpose, unless very much diluted, since it consists of galls, granate-peels, or the like astringents mixed with vitriol; which, applied to the tender vessels of the naked bone, would so contract them, that the  
lamella

lamella of the bone, its vessels being destroyed, must necessarily exfoliate.

If the bone (which in its natural colour should in general be reddish, or a little inclining to blue) is beset with white specks, it is a sign the subjacent vessels, which coloured the pellucid lamellæ of the bone, are become mortified, and are no longer pervious to the juices they ought to transmit; and therefore an exfoliation must be expected of the bony lamella, destitute of its subjacent vessels.

The famous Ruyfch, who was a person of a very large age as well as many years most extensive practice in a populous city (*Amsterdam*) says, that in real fractures of the skull, where the symptoms are neither violent nor increase, we ought not to proceed immediately to incision, or the trepan, but that we should first endeavour to undertake the cure by bleeding, and frequent applications of warm cephalick fomentations; and he adds, that he had by these methods only, very happily relieved many patients, when the  
knife

knife was almost ready to be applied.

Fragments adhering to the living parts should be permitted to remain, since there is some hope that they may again unite with the rest of the bone; but if this does not succeed, and it appears from some symptoms that the separated fragments begin to corrupt, they will always either cast off spontaneously, or be removed by art. Whence also it is evident, that it is injurious to be too exact in examining wounds of the head, in order to remove the bony fragments which do not immediately come into view; since, if they adhere to the adjacent living parts, they may unite again, or cast off spontaneously, if they cannot unite; and that nature is of herself sufficient for the cure in these cases, will appear from the following history: A girl of about nine or ten years old, received, among other wounds in her body and arms, about eighteen cuts in her head, all which entered her skull, and some parts of the bones were  
cut



cut off down to the diploe ; and in other parts some of the skull was cut off close to the dura mater. The parts thus miserably wounded, were properly dressed, and the dressing renewed only every two days. In every dressing, fragments of the bone came easily away, adhering to the pledgets ; and those fragments yet adhering to the cranium grew again to the bone, and the spaces were readily filled up, where portions of the whole skull were cut off close to the dura mater ; so that in the space of five weeks this girl was cured of so many dangerous wounds.

A fissure is difficult to discover, and often escapes the strictest examination till it is too late ; especially when seated near the sutures, or when it splits the internal table of the skull, without affecting the exterior plate, or when it invades the bone in a part distant from the seat of the wound itself. Add to this, that when the fissure appears visible to the eyes, yet it often runs to a greater length

length than can be safely laid open by raising the integuments. Another reason why fissures are esteemed dangerous, is the uncertainty of knowing how deep they penetrate, whether into the diploe, or deeper. If the fissure of the skull extends to the diploe, there will be very considerable vessels wounded; and the extravasated humours will not be able to discharge themselves through the narrow fissure of the bone; whence they will corrupt and destroy the tender cellular substance of the bone which constitutes the diploe, and by the gradually spreading of the malady betwixt the two tables of the skull, it may corrupt them also: and when once the internal table of the skull is eroded, the encephalon may be affected, so as suddenly to destroy the patient, at a time when it is thought there is no latent danger; but after death the whole bone is found corrupted.—A simple vertigo denotes a slight compressure of the brain only; but a caliginous vertigo shews an encrease of the disorder.—That there is a remarkable consent of parts between  
tween

tween the head and præcordia, so as to be mutually affected, is certain; but how this is brought about, is not easily or readily to be accounted for.

A palsy is always a bad sign when it follows upon wounds of the head, because it denotes that the very medullary substance of the brain is injured or compressed.

Suppurations may be formed in the cavity of the skull, and the patient notwithstanding recover. *Ambrose Paré* gives a very remarkable instance of this. A lad had so violently hit his head against a stone pavement, that he was immediately deprived of all sense; a fever, delirium, and other malignant symptoms ensued. On the seventh day a copious sweat and sneezing appeared, and he discharged a large quantity of matter from his mouth, nose, and ears, to the great abatement of all the symptoms; and afterwards recovered.

Many cases in surgery will prove, that, after dividing the cranium and dura mater, the substance of the brain will degenerate

nerate into a surprising excrescence, or tumour. One or two examples will suffice.

A lad of fourteen years old was struck in play with a wooden ball, on the left side of the os frontis ; he presently tumbled down, had bilious vomits, and afterwards continued to bring up every thing which he took into his stomach. Continuing still in a very bad way, the skull was trepanned about two months after he had received the hurt ; a purulent matter immediately forced its way out through the opening, and afterwards the substance of the brain itself began by degrees to protuberate ; nor could it be confined ; the luxuriant part therefore was cut off by tying a thread round it. Soon after a like fungous substance arose again to the height, of three fingers breadth ; which was again removed in the same manner. And this was so often repeated, that all the fungi together would equal the size of one's fist ; yet the patient was afterwards cured.

A lad of seven years old received a violent wound upon the right parietal bone by a fall from a horse. On the fifth day, a fungus grew out of the fractured bone to the length of a thumb, and the thickness of a finger; the parents were unwilling to permit an accurate inspection of the wound, or to suffer an elevation of the depressed skull; and continually affirmed, they had rather their son should die with little pain, than undergo the torture of a cruel operation, the event of which was uncertain. Hence the physician and surgeon were obliged to use hardly any thing but desiccatives to remove the fungus. And thus the fungus continued almost unaltered for three whole months; but in the mean time the symptoms, which at first were very malignant, were now become very mild and almost removed: all the animal, vital, and natural actions of the body were restored, insomuch that the child grew lustier, and spent his time in play as usual. About the beginning of the fourth month,

month, the fungus encreased very much, but was taken down by sprinkling on a powder *ex euphorbio & alumine usto*; but within the space of twenty-four hours, another fungus grew up to the bigness of a hen's egg, with an encrease of all the bad symptoms. In this fungus was perceived a strong pulsation of the artery, and by roughly handling, it bled very copiously. In vain was the reduction of this luxuriant fungus attempted by corrosives, and therefore the surgeon tied a thread round the narrow neck of the tumour; but then there arose so violent a pulsation in the arteries of the fungus, that the whole body of it seemed to leap up. But this method of constriction by ligature was continued, and the greatest part of the fungus dropped off with the ligature, smelling intolerably; the remains of the fungus appearing black, sordid, and quite corrupted, afforded a lamentable sight, and was followed with convulsions, tremblings, and a palsy of one side. Yet did this corrupt part of the fungus separate

rate in a few days after; but then another fungus of an ash colour arose to the size of a walnut, without giving any pain; and a manifest pulsation was perceived in the arteries dispersed through the substance of this fungus, which, emerging out of the wound, separated spontaneously in a few days, and left a large sinus or cavity behind, in the substance of the brain. In two days afterwards, the cavity was in one night's time filled with a new fungus; and in a few days after, the miserable child being terribly convulsed and distorted for two whole days, then expired in the fourth month after the wound had been received; but all the senses, speech, and reasoning faculties continued even till death.

This surprising history teaches us that fungous excrescencies of the brain are vascular, dilate surprisingly to a considerable bulk, and arise again very suddenly even after they have been removed. In the body of this child, it was observed that the cortical substance of the brain was

I

quite

quite consumed in the place wounded, and all its surface was covered with a large quantity of matter.

Large wounds of the head, in which there is a fracture of the skull sufficient to discharge the extravasated humours, are often less dangerous than small wounds of the head, where the extravasated humours are confined under the skull. *Hippocrates*, enumerating the signs of malignity in wounds of the head, joins these three symptoms together, viz. a *dimness*, *vertigo*, and *falling down*. And in another part of his writings, he admonishes us in all considerable wounds of the head to ask whether the patient tumbled down and fell into a deep sleep, or stupefaction; for if any thing of this kind happened, the greater care will be required in the cure; he then adds as a reason why this question is necessary, not that it always denotes the brain to be wounded, but because the encephalon is then in some degree sensible of, or injured  
by



by the wound—τὸ ἐγκεφαλὸν ἐσακκισαντος τὸ  
τραυματος.

The dura mater firmly adheres to every part of the skull; but then its adhesion is found so strong in the futures, that they can scarce force it up by the interposition of an iron wedge. It is therefore evident that if the trepan was to be applied upon a future, the round piece cut off from the bone could not be removed without greatly lacerating the dura mater, which might produce intense pains, convulsions, and other malignant consequences. Hence, by the consent of all authors, the futures should ever be avoided, and the perforation of the bones rather made on each side the future than on the future itself.

A wound will hardly ever be brought to cicatrize which has penetrated into the frontal sinus.

Extreme hot air and freezing cold are always highly pernicious in wounds of the head; but the temperature of the spring is most serviceable.

*Of Wounds of the Thorax.*

**I**N all wounds of the thorax the first enquiry ought to be, whether they have penetrated into its cavity or not? or whether the air rushes impetuously through the wound; which the surgeon may easily know by compressing or closing the lips of the wound with his thumb or fingers, so, as that no air can enter or return by it: he then orders the patient to inspire as much air as he well can, and to retain the inspired air in his lungs by shutting the larynx; and then before the patient breathes out the air, he places a wax candle opposite the wound, and suddenly opens its lips; if now any air entered into the cavity of the thorax, it will be forcibly blown out through the wound, so as to move the flame of the wax candle.

A thin dew or moisture is continually exhaled every moment of life from small arterial ducts, which open throughout the  
whole

whole surface of the lungs and pleura, and prevent the concretion of one with the other. This circumstance is beautifully observed by *Hippocrates*, when he says, “ Every part of the body which is not  
“ solid or grown together, but lined ei-  
“ ther with skin or flesh, is hollow in a  
“ healthy state, replenished with va-  
“ pours, but in a morbid state contains  
“ ichor.” If water injected into the mouth of a wound with a syringe excites a cough, and is discharged through the wind-pipe, we may know the wound has entered the lungs, without penetrating into the cavity of the thorax.

The best dressings for wounds of the thorax are flat pledgets of lint, spread with some vulnerary balsam, or soft digestives, according to particular circumstances; over these to apply a plaister not too tenacious, and perforated with several small holes, applying at the same time a convenient bandage, if necessary; being cautious however not to compress the mouth of the wound by the compresses

and bandage, so as to hinder the discharge of the extravasated humours.

Great caution is necessary to determine whether the wound has penetrated into the cavity of the thorax; for the cavity ascends much higher before than behind, where it descends lower; gross errors have been thence committed, when, thinking a wound to have penetrated the thorax, it has in reality entered the cavity of the abdomen.

Emphysematous swellings denote the lungs to be injured; for in that case the blood flowing from the wounded blood vessels into the air vessels of the lungs, by mixing with the air it will become frothy, and therefore frothy blood will be coughed up from the wind-pipe, or else the same blood will run in spurts from the external wound.

The patient's lying easiest on his back, it being very uneasy for him to lie on the wounded side, and impossible for him to lie on the sound side, is a symptom of very great moment: for the diaphragm

phragm descending, or being continued lower on the back part of the body, much encreases the capacity of the thorax; so that the blood extravasated within the capacity of the thorax will naturally subside to the lower and back part of the thorax when the patient lies down; and the back part of the diaphragm will descend more easily, for the middle of it is tendinous, to which the broad basis of the pericardium strongly adheres, and therefore cannot easily be depressed; from whence it is evident, that the extravasated blood will be lodged easier in this posture than in any other. But when the patient lies on the injured side, the posture of the body will be more painful, though tolerable; but if the patient lies on the sound side, the weight of the extravasated blood will press the mediastinum and pericardium towards the other side of the thorax, whence its capacity will be diminished, and the difficulty in respiration encreased; which the patient in this posture no sooner perceives, but he immediately changes it, or turns

himself even against his inclination, to avoid being suffocated.

When we know the seat of the wound, and the course of the wounding instrument through the parts, we can then tell from anatomy whether or no any large artery or vein be injured. Thus the larger trunks of the intercostal arteries run near the lower margin of the ribs; those of the internal mamillary are placed near each side of the sternum, at about the distance of a finger's breadth from that bone, behind the cartilages of the ribs; the large vena azygos is seated on the right side of the vertebræ of the back, &c. From a thorough knowledge of all which, the wound is determined more or less dangerous.

The diaphragm ascends higher in the right side of the thorax; therefore when the paracentesis of the thorax is made on the right side, it is usually performed betwixt the third and fourth ribs. But when on the left side, between the second and third of the spurious ribs, the  
opening

opening ought to be next made with a knife, or some cutting instrument, not with a pointed one as in the paracentesis of the abdomen, which is made by a steel bodkin included in a silver canula, because there would be great danger of wounding the lungs by such a puncture.

It appears from physiology, that it is necessary there should be no air in the cavity of the thorax, in order for the free expansion of the lungs by inspiration: now this discharge of the air may be procured either by suction, or by the method following, which is the best of any. Let the lips of the naked wound be pressed together by the fingers in such a manner as that no air can enter, and then let the patient draw in a large quantity of air into his lungs by a deep and long inspiration, and let him retain this air as long he is able: now the air thus retained being rarified by the heat of the parts, will expand the lungs, and compress the air lodged betwixt the lungs and the pleura. If then the lips of the wound are opened,

ed, or drawn asunder, a great part of the air confined in the thorax will be expelled: after this the lips of the wound are to be immediately closed again, before which the patient must not expire. By repeating this method several times, the whole quantity of air may be entirely expelled from the cavity of the thorax, and the patient will directly perceive, that he can breathe much more commodiously. All the air being thus expelled, let a sticking plaister be immediately applied at the instant when the patient retains the inspired air in his lungs; at which time the lungs being distended, and contiguous to the pleura, will obstruct the passage of the air about to enter through the wound. This plaister is to be continued upon the parts for a very considerable time; and when it is necessary to renew the dressings, another sticking plaister of the like kind is to be applied with the same precautions. And if the seldom dressing of a wound is ever useful, it must be certainly so in these wounds of the thorax.

*Of*



*Of Wounds of the Abdomen.*

**A**LL wounds injuring the containing parts of the abdomen without dividing the peritoneum are called not penetrating, as those which have perforated the peritoneum are said to penetrate into the cavity of the abdomen.

Wounds not penetrating the abdomen have a circumstance peculiar to themselves, which, being neglected, has often produced an ugly train of bad consequences; for the diaphragm being depressed at every inspiration, all the contents of the abdomen are thereby compressed, and again, in expiration they are repressed by the abdominal muscles; whence it is evident, that the contents of the abdomen receive a continual pressure from the diaphragm and muscles of the abdomen. If therefore the equality of this pressure be removed in any part, by a wound in the integuments extending almost to the peritoneum, that membrane  
being

being easily dilatable, will be extended by the force of respiration so as to form a sacculus, into which the intestines, omentum, &c. may enter, and form an hernia, which is no more than a dilatation of the peritoneum in some part, into which the contained viscera of the abdomen may prolapse and enter; for it is very rarely, if ever, that a hernia is formed by a rupture of the peritoneum, but almost constantly from an expansion of that membrane into a sacculus, notwithstanding *Celsus* seems to have been of another opinion; and we are taught by most certain observations, that ruptures may be formed in any part of the abdomen where the equable pressure is removed from the peritoneum.

Narrow and deep wounds of the integuments easily degenerate into fistulæ; and therefore care must be taken by an artificial pressure, and a proper posture of the patient, to prevent the confined humours from forming sinusses in the panniculus adiposus. But the broader sort of wounds

in

in the integuments very much endanger ruptures; whence it will be proper to unite them by suture, and to secure the weakened part by an artificial application of compresses and bandages, that the contents of the abdomen being pressed there may not dilate the peritoneum. Wounds of the mesentery, without injuring any other parts, cause the most excruciating pains of the abdomen, and generally prove fatal in two or three days; it appears to be probable that these symptoms arise from the nerves of the mesentery being injured.

A discharge of bile from a wound of the abdomen is a very bad sign.

It has been observed that no stench (which is the sign of incipient putrefaction) is perceptible any where more than in the cæcum, colon, and rectum; but never in the small intestines. When the fæces therefore are discharged thro' the wound, or when their fetid smell emits through it, we may conclude the large intestines to be wounded.

*Of Contusions.*

**A**LL the disorders which follow in consequence of contusion are reducible to three heads; from a rupture of the solids, and an extravasation of the fluids, which destroy the functions resulting from the determinate motion of the juices through the uninjured vessels; from the pressure of the extravasated humours, collected in some natural or præternatural cavity of the body, and by their bulk disturbing or abolishing the functions of the adjacent parts; or, lastly, from the putrefaction of the stagnating and extravasated juices, which may acquire an acrimony sufficient to corrode and destroy the circumjacent parts.

When the pressure of the atmosphere on the surface of the body is either diminished or wholly removed from any part either by suction, the application of cupping glasses, or the like, the blood then rushes into the vessels of the part

less

less pressed, and distends them, so as to enter many of the smaller dilated vessels, which did not naturally contain any red blood; and the red parts being impacted in these vessels, without being able to return, give the appearance of a red, livid, or often of a blackish spot. Such a spot being formed in any part by suction, the part is said to be blood-shot; but when a part being bruised with a hammer has its blood vessels suddenly compressed by the stroke, the blood being pressed forward into the lymphatic or serous vessels, will change their colour and produce a very considerable spot of this kind. Blood-shot therefore differs from an ecchymosis, inasmuch as the blood is strongly pressed into the serous vessels without any rupture in the former; but in an ecchymosis the vessels being ruptured, the blood is extravasated into the adjacent spaces; whence the former of these takes place, rather about the circumference than in the middle of the contused part. But it is very evident, that  
both

both blood-shot and ecchymosis may both of them follow after violent contusions; whence they are frequently confounded by authors without distinction.

The viscera contained in the cavity of the thorax are on all sides securely defended by the arched ribs, the sternum, and spina dorsi; the abdominal viscera are more liable to be injured by contusions, since they are for the most part covered only by the soft integuments and muscles of the abdomen; and tho' the spleen and the largest part of the liver, are defended by the false ribs, yet have these viscera been sometimes so violently crushed by contusions, that death itself has speedily followed; nor will this appear wonderful, if it be considered that the substance of the liver and spleen is so tender, that, unless great caution be used, they cannot be taken whole out of the dead body; hence it is, that violent contusions of the abdomen so often prove suddenly fatal.

Among

Among ten cases where the breasts are scirrhus or cancerous, nine of them arise probably from contusions. If no inflammation nor any great pain appears in the contused part, gentle frictions are extremely useful; for by this gentle agitation, the concremented blood is attenuated and divided, so as to be capable of returning through the small mouths of the bibulous veins.

Recourse ought not to be had immediately to amputation, since we find disorders, though seemingly altogether desperate, have sometimes been happily cured without it: therefore, it seems to be most adviseable always to try every other method where it may be safely done; and we are furnished with several remedies, by which the parts, tho' even mortified, may be so preserved, that the putrefaction will not easily spread; we may safely wait a few days to see whether nature will attempt a separation, or whether any symptoms appear of life returning again into the part.

*Of Fractures.*

**S**URGEONS usually distinguish fractures into three species, viz, *simple*, *compound*, and *complicated*. A simple fracture is said to be, when a single bone is only fractured in one place, without any considerable injury of the incumbent or adjacent parts. But when such a fracture happens in any part of the body, where two large bones lie close on each other, as in the cubitus, if the radius only be fractured, without injuring the ulna, that species of fracture is then termed incomplete by some surgeons: because the situation of the parts is not then much disturbed, and the limb retains its proper length; but when the ulna and radius are both fractured together, or the tibia and fibula in the leg, they then call the fracture complete, or even compound; though it would seem that a fracture may be termed compound,



pound, where a single bone only is fractured in several places. But when a fracture of one or more bones is also attended with symptoms that require a distinct treatment, such as a wound, ulcer, &c. it is then termed complicated, because a particular regard must be then had to those concomittant disorders, during the cure of the fracture.

A fracture in the upper part of the thigh-bone, near the hip is seldom curable, without leaving some defect in the motion of the limb; but when the same bone is fractured in the middle, or towards the knee, there are much greater hopes of obtaining a happy cure. This seems to follow, because the higher the fracture of the femur, the greater number of muscles draw up the lower part of the bone; and as those muscles are very strong, they require a very forcible extension, in order to reduce the fractures, which are then also very difficultly kept in contact.

The most disagreeable accidents that usually happen in consequence of fractures seldom proceed from the injury of the bone itself, but from the injury offered to the adjacent soft parts, which are compressed or wounded by the fractured bone.

That kind of fracture is of all the best, which is termed transverse or raphanoide; especially if the fragments as yet sustain each other, and are not quite displaced. But the cure of an oblique fracture is much more difficult; because in that case the fragments do not mutually sustain each other, and they are very easily displaced or removed from their contacts by the contraction of the muscles fastened to the bones; nor is it easy to secure the parts so by bandage, as that the fragments shall continue in their proper places after they have been reduced. *Celsus* very judiciously observed this. “ Of  
“ these fractures, the most tolerable is  
“ the simple and transverse, but it is  
“ worse when the fracture is oblique, and  
“ when there are fragments; and the  
worst

“ worst of all, when those fragments are  
“ sharp pointed.

*Hildanus* says, that the consolidation of fractured bones succeeds very difficultly in women with child; for nature being fully employed in forming and perfecting the fœtus, in a manner neglects to form a callus.

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*Of Luxations.*

**A** Luxation has by custom been restrained to signify only the displacing bones from their articulation where they naturally resided. *Ægineta* gives an excellent definition of it. “ It is, says he, “ the slipping out of the head of a bone “ from its proper cavity, into some im- “ proper place, whence the voluntary “ motion thereof is obstructed.”

There is a threefold humour in the cavities of the joints, the universally perspiring vapours, the medullary oil, and the mucilage separated by the glands

there seated ; from all which, mixed together, arises that lubricating liniment, which being attenuated by the warmth and mutual attrition of the bones, is returned, or absorbed in the same quantity in which it was sent into the joint : but if the return or absorption of this liniment be impeded or diminished, by any cause, the fecerning and expulsive causes still remaining, the liniment will be then so accumulated as to distend and weaken the ligamentary capsule of the joint ; whence the prolapsion of the articulated head of the bone from its proper cavity may easily arise.

The chief signs of a luxation are a præternatural tumour from the head of the bone being displaced into some other part with an unusual cavity in the place where the head of the bone was naturally seated. But that the diagnosis may be more certain, both these signs should be present ; for either of them alone is often found fallacious.

Rest

Rest is always necessary to restore the strength of the over-strained ligaments, or to procure an union of them if they are broken; but care must be taken not to let the ligaments become rigid by too long a rest, nor to give rise to an ancylosis by an accumulation of the mucilage of the joint, which may become inspissated for want of motion. Hence it is adviseable to gently move, and rub the joint, for some days after it has been dislocated, provided all the pains are abated, and there is no danger of an inflammation, as *Hippocrates* very carefully remarks, in treating of the cure of a luxation of the humerus. And *Celsus* observes, that this caution ought more especially to be taken notice of in a dislocation of the elbow: “ The dressings are to  
“ be speedily and often removed, the part  
“ is to be well fomented with warm wa-  
“ ter, and to be rubbed for a considerable  
“ time with oil, salt, and nitre; for a  
“ callus is sooner formed in the cubitus  
“ than in any other joint, whether it

“ remain displaced, or reduced to its  
“ proper situation. And if it should  
“ grow by too long rest, the flexibility of  
“ the joint will be afterwards destroyed.”

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*Of Inflammation.*

**T**H E R E are two concurring causes, which together constitute the nature or existence of inflammation, namely obstruction, with an encreased velocity of the blood flowing into the obstructed vessels; for the blood stagnates in an inflammation, and cannot pass through the smallest vessels, even though it be urged forward by the impulse of the succeeding blood.

A true phlegmon is almost constantly seated in the smallest sanguiferous arteries, or else in the serous arteries dilated. In the blood there is always a tendency towards concretion, which is the stronger in proportion to the stronger action of  
the

the vessels upon their contained blood; for the blood of strong men taken from a vein immediately congeals, and after standing a while at rest, exhibits much cruor or crassamentum, and but little serum: the contrary of all which we observe in the blood of a weak girl. But all this depends on the more or less powerful action of the vessels upon their contained blood. But by an increased motion, the action of the vessels in a given time is more frequently and strongly repeated upon the contained fluids, by which means they acquire a greater condensation or compactness. Besides this, by an increased motion the most fluid parts are dissipated, because a greater quantity of blood is applied in a given time to the organs, which from thence separate and discharge the thinner juices: and from hence again the tendency of the blood to concretion will be augmented. Add to this, that an increased motion is followed by an increase of heat; from whence likewise the blood may be  
so

so inspissated, that it can no longer pass through the narrow extremities of the smaller arteries. And therefore in acute diseases, when the heat is much encreased, the injured function of the brain and the difficulty of respiration immediately denote that there is such an inspissation of the blood, that it can no longer pass freely through the narrowest passages of the smaller arteries in these viscera.

The saliva does not concrete with the heat of boiling water; hence it appears to be thinner than the serum of the blood. A copious discharge by spitting will therefore drain off a great part of the thinner juices in the body, which the blood being deprived of, is rendered by that means less pervious or fluid. Those who by an ill custom or an abuse of tobacco, daily discharge great quantities of their saliva, are for that reason so often afflicted with the worst kinds of obstructions in their abdominal viscera.

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The seat of a true phlegmon is most generally in the membrana adiposa.

An erysipelas and a phlegmon differ only in the magnitude of the obstructing particles; for in a phlegmon the red part of the blood is accumulated in the obstructed and distended vessels; but in an erysipelas, the serum of the blood, mixed with a little cruor, becomes impervious in the same manner: besides, the seat of a phlegmon is chiefly (as was said before) in the membrana adiposa, whereas an erysipelas invades either the external integuments of the body, or the internal membranous parts: the dilating vessels admitting a larger quantity of the red blood, and spreading the disorder into the adipose membrane, may change an erysipelas into a phlegmon.

An inflammation seated in the smallest lymphatick arteries we call an *œdema calidum*. In this case there will always be danger, the thin lymph of the blood acquiring such a cohesive disposition, as may render it impervious and apt to obstruct

struct its small vessels ; from whence the functions of the brain more especially may be disturbed, as they depend on a free circulation of the finer humours through the smallest arteries, whether this disorder be originally formed either in the encephalon, or by a translation from some external part inwards. If this disorder is violent, the smallest vessels being destroyed may incline the parts to a sudden gangrene.

Two causes are observed to occur in every inflammation seated in any series of the arteries ; namely, an imperviousness of the fluids, occasioned by a narrowness of the vessels, or a concretion of the particles ; or else from an *error loci*, and the propelled humours being at the same time urged forwards with an encreased velocity into the impervious vessels by the *vis vitæ* acting behind them. If these concur, an inflammation is present ; but if there is only an imperviousness of the fluid, it affords the idea of an obstruction ; which last is therefore the predisposing

disposing or proëgumenal cause of inflammation, while the procatartick or accessory cause is the encreased motion urging on the back of the obstruction. But while these causes act, certain changes are produced in the enflamed part, which being observed, afford the true diagnosis of a present inflammation.

Our blood when at rest separates into two parts, the one a red concrete, and the other a watry serum, in which the red part swims: but there are two causes in the body which prevent this concretion; namely, a continual motion, and the interposition of a thinner fluid betwixt the red globules, by which they are removed from their mutual contacts.

We perceive pain in an inflamed part, which was not there before, because the blood thrown into the obstructed arteries by the force of the heart, will spend all its force in removing the sides and extremities of those arteries; and from thence the sides of the arteries will recede farther from their axis; and when the force of  
the

the heart ceases, they will return or contract again with so much a greater force, in proportion as they were more distended. The pulse will be therefore thus encreased in the inflamed part, and being raised in strength and velocity beyond its natural action, it will be very distinctly perceived.

Thirst, heat, watchings, &c. do not always attend every inflammation, but only when the whole mass of blood has acquired such an inflammatory spissitude, that it cannot pass through the smallest vessels.

A phlegmon is a red tumour, tense and shining, with a pricking pain, heat, and pulsation, accompanied with a fever, either in the whole, or at least in a particular part of the body.

An encreased motion of the humours is not only prejudicial, inasmuch as it may break the continuity of the obstructed vessels, but also as it compacts the obstructed particles together with a greater force. But to disperse an

inflammation, it is required to resolve the obstructing concrete into those small particles, by whose combination the obstruction is formed: but the more the thinner humours are expressed which prevent the mutual contacts of the grosser particles, so much the more strongly will these last be united and pressed together, the more firmly will they cohere, and the more difficult will it be to dissolve them again. Hence it appears why the most skilful physicians despair of a resolution in a pleurisy and such like other diseases, in which a most violent fever has attended for above twelve hours time, and rather direct all their curative intentions to promote the concoction and excretion of the inflammatory matter.

When the most fluid parts of the blood are dissipated in the beginning of acute diseases, either by sweats, diarrhœa, or any other evacuation, there is always great danger of a fatal event: for the grossest particles of the blood are not prevented from concreting or touching each other

other but by the interposition of the more thin humours.

A suppuration is that salutary effort of nature, by which she separates every thing which is become unfit for receiving the vital circulation from the other sound and living parts.

When the influx of the vital fluid into the arteries and its return thro' the veins is from any cause destroyed in some soft part of the body, it occasions the death of that part; which from its beginning to its formation is termed a gangrene. This manner therefore of terminating an inflammation differs from a suppuration, inasmuch as all the motion of the humours is entirely destroyed in the affected part, by a sudden rupture of its small vessels; whereas in a suppuration, the obstructed extremities only of those vessels are gradually separated, by the motion of the vital humours pressing on from behind.

Any very sharp substance or liquor applied externally to the body, whether it be acid, alkaline, or of any other species of acrimony will cause a gangrene.

All

All inflammations are dangerous when attended with a violent fever. A sudden cessation from pain in violent inflammations give great room to suspect a gangrene. The most intense cold will intirely impede the circulation of the humours by congealing them, and by contracting the vessels; whence a sudden mortification of a part often happens in consequence of a severe frost: but when the *vis vitæ* is capable of removing the obstructions in the benumbed part, then an intense heat arises from an attrition of the more condensed humours through their contracted vessels; which last is a thing frequently experienced by those who have been rubbing their hands with snow, when the uneasy sensation of cold is soon followed by an intense heat. Hence it is evident, that the application of cold things to an inflamed part must be prejudicial; inasmuch as they totally interrupt the circulation, or inasmuch as they excite a more intense heat afterwards in the parts which are already too hot. But sometimes the ap-  
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plication of cold things may be serviceable, when the grosser parts of the humours have entered the smaller vessels by an *error loci*, as these vessels, being contracted by the cold, may repel the matter back into the larger branches; and this more especially when the disorder is seated in the thinner fluids, since the red part of the blood immediately congeals in cold water, but the serum and thinner lymph does not. But it is easily apparent that no good can be expected from the application of cold things, when the disorder is recent, and at the same time mild; for if the obstructing matter of the inflammation be so impacted in the smallest extremities of the vessels as to be quite stagnant, it will rather increase the disorder. The use of revulsions in diseases is confirmed by daily experience, as well as by reason; for so soon as the resistance to the blood's motion is either diminished, or totally removed in any part of the body, it immediately flows, or is derived into that  
part



part with a greater velocity. Thus if an artery, even but of a moderate size, be divided, all the blood will flow thro' that vessel which does not resist. When all the vessels and viscera of the abdomen are suddenly freed from a considerable pressure by the birth of an infant, all the blood is frequently derived into those vessels so forcibly, that unless the flaccid vessels and viscera be compressed by swathing with a roller, the child-bed woman may suddenly perish in a fatal syncope for want of the blood's due pressure in the vessels of the brain and cerebellum. The same thing also happens if the abdomen is not swathed, when all the water is discharged at once by paracentesis in a dropsy. It is therefore evident, that by diminishing the resistance in any part of the body, the blood will be derived thither more forcibly and plentifully. But the fulness of the vessels, and the strength of their coats, resist the impulse of the blood from the heart, which are impediments to their dilatation; and there-

fore every thing which lessens the fulness of the vessels, or occasions their sides to yield more easily to the distending blood, will derive the humours more powerfully and copiously into that part. If again we consider, that the blood propelled by the heart is sent partly upwards to the head, and superior parts of the trunk, and partly downward to the lower extremities and viscera, it will appear evident, that by diminishing the resistance of the lower vessels, or by evacuating them, the quantity and impulse of the blood will then be derived more towards the inferior parts, and driven back from the upper. It is therefore possible to make a revulsion of the arterial blood from an inflamed part to any other; especially when the part, towards which the revulsion is made, receives its blood from the same common trunks or larger arteries.

A cool air conduces much to moderate the swiftness of the circulation of the blood. But a dry air is to be preferred

ferred, *cæteris paribus*, before a moist air, which last, if cold, may cool the blood too much.

The more firm and elastic the vessels are which have been distended by an inflammation, the sooner do they return to their former shapes and dimensions; and, on the contrary, more time is required to restore the strength of the vessels in proportion as the inflammation is seated in a lesser series of them.

A resolution only can be properly called a complete cure of an inflammation, which it removes without inducing any other disorder; whereas the other ways of terminating an inflammation cannot be said to make a complete cure, since they introduce an abscess or scirrhus, even though they remove the inflammation; for in this case there is another disorder introduced, which will require its particular cure, before the parts can be restored to their healthy state. But when an inflammation terminates in a gangrene, or a sphacelus, it does not

then conduce to a cure, but the death of the parts.

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*Of Abscesses and Fistulas.*

**I**NFLAMMATION is most undoubtedly best cured by resolution. So long as the material cause of a disease continues of such a nature, as to either continue or increase the distemper, it is termed *crude*; but when it has been so altered by the remaining *vis vitæ*, its own natural disposition, or the use of proper remedies, so as to be less remote from the laws of health, and to produce less disturbance in the functions of the body, it is then said to be *concocted*. *Crudity* is known by the intensity or increase of all the symptoms, but *maturatio*n by the remission of them.

The maturation of all crude inflammatory matter into concocted pus, must be performed by the remaining *vis vitæ*; for, when that is languid or defective, no matter is formed; and there-

therefore *Hippocrates* reckoned the appearance of dryness in an ulcer, either before or in a disease, among the signs of death. It is also from a weakness of the vital powers, that the spitting is diminished, or even frequently quite ceases in the latter end of a pulmonary consumption; but the *vis vitæ* is estimated by the force of the circulating humours through the vessels; and as the obstructed ends of the vessels with their impervious contained matter, are to be separated by the impulse of the humours acting from behind, it is evident that this separation will be sooner performed, if the strength and swiftness of the blood's motion is increased through the vessels of the part to be suppurated; for then the circulating fluid will strike more frequently and strongly, in a given time, against the obstructed ends of the vessels, and separate them sooner from their cohesion. But it is to be observed, that too great a velocity of the humours suddenly excites a rupture in the vessels, and does

not procure a gradual separation of their ends, in which case a gangrene follows instead of a mild suppuration. When clean and laudable matter is too long confined in an abscess, it loses its unctuousity and balsamick thickness, by which it almost resembles the cream of milk, and is changed into a thin *ichor*; but this great tenuity, arising from putrefaction, is always accompanied with a greater acrimony; the whole internal surface, therefore, of the cavity in which the attenuated and acrid matter is confined, will be continually macerated and corroded by the sharp *ichor*; the ends of the small vessels will be dissolved, and their extravasated humours acquire the same kind of corruption, so that the sides of the containing cavity being continually eroded, the sinus of the abscess will be always increasing, and the quantity of matter enlarged by the humours derived thither from the eroded vessels.

I have seen, for want of discharging the matter which was formed by a suppuration

puration of the parotid gland, that it has made itself a passage downward through the *panniculus adiposus* of the neck to the shoulder, arm, and even to the bending of the elbow, insomuch, that the ligaments which connect the articulation of the elbow were so corrupted, as to produce an incurable anchylosis. An abscess was formed after a deep inflammation round the articulation of the *femur*; and as the pus concealed under the large muscles could not be evacuated, it descended and formed a sinuous ulcer, running through the whole length of the thigh and leg, whence the robust youth was destroyed by a purulent cacochymia, after suffering the most tedious affliction, and trying all means to no purpose. If now we farther consider, that this matter collected in the cellular membrane attenuated by the warmth and stagnation, often lies under strong muscles, it is very evident, that being pressed by the motion of those muscles, it may be propelled through

through all the adjacent parts, and by that means produce sinusses and fistulæ of the worst kind, more especially when the matter lodging in the *tunica adiposa*, insinuates itself betwixt the muscles themselves. Now as the *tunica adiposa* is of a greater thickness, or as there are a greater number of strata of muscles lying over each other above the suppuration, so much the worse sinusses may be formed by the too long confined pus. And hence it is that such troublesome fistulæ and sinusses are sometimes observed in the abdomen, by reason of the great quantity of fat, seated and interposed betwixt the several strata of the abdominal muscles.

There is no part of the body in which there are worse fistulæ and sinusses formed, by matter being too long confined, than about the *intestinum rectum*: for as the grossest fæces must pass through that intestine in order for their discharge, it was necessary that it should be capable of an easy dilatation every way; and therefore there  
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is a large quantity of soft fat placed all round this intestine, into which the confined matter, which has been too long retained in an abscess, may penetrate and form sinusses: if now the *rectum* itself is also corroded, the matter may spread itself through the cellular membrane, and mucilaginous cryptæ, &c. of that intestine, so as to produce most tedious maladies, which are still much encreased by the foulness of the intestinal fæces which are to pass this way.

A *fistula* differs from a *sinus*, in that it is narrower and generally of a longer standing, having its orifice and internal surface frequently covered with a callus.

They are generally seated in the *panniculus adiposus*; it being not only continued round the muscles and tendons, but also inserted betwixt the subdivisions of the muscles into their lesser portions, even as far as the eye can trace them. From whence it is evident, that sinusses and fistulæ may often turn and wind in a surprising manner, and often penetrate  
to

to a very great depth from their opening, as has been frequently observed by surgeons of the most eminent practice and knowledge.

The cure of all fistulas and sinusses requires in general, 1. That a free passage be procured to the matter, and to prevent its long stagnation, so as to corrupt in the sinus or fistula. 2. To cleanse or deterge the internal surface of the cavity of the sinus or fistula, and to reduce it to the state of a clean wound. 3. To bring the separated parts, now clean, into contact, and retain them so as they may grow to each other.

If the orifice of the sinus or fistula is so placed, that the humours contained in its cavity cannot discharge themselves by their own weight, the cure is always difficult; for they will be accumulated, and increase the præternatural cavity.

The injection of deterfives are only serviceable, as they remove the fordes, and consume the callosity of a fistula; but after the parts have been depurated, they will

will be rather injurious by preventing their union; the whole internal surface may be known to be clean, if it discharges a white, smooth, and uniform matter, without any sanies or ichor, and without any fetid smell.

If we consider the situation of the inguinal and subaxillary glands, they will appear to be well adapted to receive an afflux of humours, which ought to be discharged from the whole habit; for they are placed in the very soft adipose membrane, almost free from all muscular compression, having very large arteries, veins, and nervous trunks near them, from which they receive their branches. But these glands have so great a commerce or consent with the other branches of these nerves, that when they are injured, these glands are often immediately inflamed and swelled. Thus have I frequently seen a very painful paronychia produce a sudden tumour in the axilla, even though the disorder was seated in the end of the finger. When a  
woman

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woman unfortunately run a needle up under her nail, so as to injure the nervous substance which is there seated, with the most acute pain, I was surpris'd to find that in a quarter of an hour after there was a considerable tumour in the armpit of the same side.

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*Of a Gangrene and Sphacelus.*

SO long as the soft parts only are in a dying state, or are actually dead, the case is called a *gangrene*, which has its seat principally in the *panniculus adiposus*; but when the muscles, the tendons, the ligaments, the periosteum, or the bones themselves, are absolutely mortified, then the case is termed a *sphacelus*. The cause which produces either of them, is, nevertheless, still the same, namely, whatever takes away or destroys the influx, efflux, secretion, and excretion of the humours in any part of the body.

It is frequently a difficult matter to determine about the existence of a sphacelus;

celus; for the *panniculus adiposus*, if violently inflamed, oft becomes immensely thick, even in those places where there is very little fat; as, for instance, in the back of the hands and feet, and in the fingers and toes. If now a gangrene seizes on those parts, the instrument may be thrust down very deep, without any sense of pain. The *panniculus adiposus* also when distended, and confined within a whole skin, may so compress the parts underneath it, as to take off from the quickness of feeling, or even to make them insensible, though as yet they may not be quite dead, but capable of reviving again upon the removal of the pressure; so that we cannot conclude that there is an actual sphacelation, unless we be very sure, by the deepest punctures or scarifications, that no pain can possibly be produced: for if there be any life remaining in the parts which lie under the *panniculus adiposus* when gangrened, we may reasonably expect a separation of the part corrupted.

All skilful surgeons very justly suspect the swift progress of the increasing disorder, and more especially if the gangrene has arose from internal causes, without any external injury.

The winter season is most prejudicial to gangrenes proceeding from the motionless state of old age; and the summer heat most noxious, when the like disorders follow after violent inflammations, or the putrefaction of humours, and more especially if the constitution of the air be at the same time both hot and moist.

A gangrene of all the viscera is not always absolutely mortal; for if they happen to a solid and membranaceous substance, as the intestines for instance, where the separation of the gangrenous corrupted parts, from the parts that are sound, be not only possible, but capable of being conveyed out of the body, the patient shall frequently recover, of which many instances may be met with in practice.

If after violent inflammations, or any remarkable hurt of the bladder, by  
wounds,

wounds, dilacerations in drawing out a stone, &c. a gangrene follows, the event is always very bad; partly from the sharpness of the urine; which, as it is continually falling upon the part thus affected, must increase the putrefaction already formed, and partly from the large quantity of nerves dispersed over the bladder, by which means the brain and the whole nervous system is surprisingly affected.

If in an acute disease, either the humours, when grown impervious from their inflammatory density, or adhering by an *error loci* in vessels which do not belong to them, so obstruct the very tender vessels of the brain, whereon life and being depend, as to take away all vital influx or efflux, the consequence will be sudden death; nor can scarce any sensible defect be possibly discovered, as the parts are too small to fall under the notice of our senses: neither is it a matter of importance, whether the distemper first seized on these parts, or the

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inflammation originally begun in other parts of the body, and was translated to the brain. Thus a pain in the thigh in a continual fever, which has suddenly disappeared, was succeeded by a phrenitis, which carried off the patient in three days.

As this disorder frequently arises from the scurvy, 'tis usual to wash the mouth often with spirit of scurvy grass, treacle, and such like medicines; but these are almost always disserviceable. If the case be slight, and in its earliest stage, (which is known by the redness, heat, and pain, and no fetid smell) sal ammoniac, or nitre, diluted with a large quantity of water, adding to it a little vinegar or lemon juice, will be very beneficial, whether used as a gargle, or by dipping soft linen rags into it, and gently applying them to the part affected. 'Tis a wrong custom, which has prevailed among surgeons, to dip a sponge in a mixture of this kind and rub it roughly against the part; for this is constantly prejudicial, both as it increases the pain, and destroys  
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the tender parts. But in case the disease begins to spread, and the parts grow fetid, these remedies will prove insufficient; and we must endeavour to subdue the putrefaction with sea salt. Twenty drops of this spirit, mixed with half an ounce of honey of roses, gently rubbed over the part affected several times in a day, will answer very well, and if the putrefaction be very great, encrease the quantity of spirit of sea salt: the spirit of sea salt even alone, without any other mixture, may be applied with good success when the case is very bad; for it will presently stop the progress of the gangrene, and the gangrenous eschar will be separated from the living parts. I have never known this application to fail me, except where the gums being entirely putrified, the jaw bone has been affected, for then I could not prevent its becoming carious; but it will certainly answer our intentions, in radically removing the gangrene of the soft parts in the inside of the mouth.

When this disorder affects the lips, we have still something more to fear : for when the integument is eroded, which covers the soft substance of the lips, the nervous papillæ are oft expanded to an immense bulk, when freed from this confinement, and degenerate into a very bad fungous cancer. Or if the membrane, which lines the inside of the nostrils, be corrupted, the bones will be laid bare, and as they are very tender, they will not admit of an exfoliation, but constantly grow carious and fall off. If a gangrene, therefore, seizes on these parts, it must be evidently very difficult to cure.

It is scarce ever known that a spontaneous gangrene, happening in the toe of aged persons, admitted of a cure.

A gangrene is produced in dropfical people, either because the water that is collected by pressing upon the parts extinguishes all motion in them, or because when it is grown putrid or sharp, it erodes the parts that are contiguous ; in  
both

both which cases there are little grounds for hope: for if the waters remain, the disorder will be increased, as the same causes which produced the gangrene will still continue to act. And if by any means they are drawn off, the parts being grown flaccid, and well nigh tabid, and no longer sustained by the uniform pressure of the fluid, wherein they were steeped, will run together, the vessels will burst, and the death of the part affected, and of the whole corporeal system, will be accelerated.

In consumptive people also, who already labour under an atrophy, from a purulent state of the blood, and which commonly ends in a very putrid diarrhæa that carries them off; 'tis very plain there can be no hope of recovery, if once a gangrene seizes upon any part of the body; for the vital strength is continually decreasing, and the nature of all the humours daily growing more acrimonious, so that neither the separation of what is corrupted, nor the restoration of

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what is left can here possibly be obtained.

It is one of the worst symptoms in a gangrene or sphacelus that has seized upon the extreme parts of the body, to have any signs of a disordered brain.

In all diseases, in which the circulatory motion of the blood is increased, a dryness arises from the exhalation of the thinnest juices; and on the other hand, in languid or chronical diseases, the body becomes turgid and swelled with accumulated humours, from the too great slowness and weakness of the circulation.

Scarifications of the gangrenous parts form, as it were, outlets, by which the corrupted humours may be expelled from within, and a passage given to those remedies which correct the present putrefaction, and prevent the future.

Cupping glasses have also a very good effect when applied to the living parts, which are near to the gangrenous, in order to increase the quantity and impetus of the vital humours flowing thither;

ther; and thus also the fibres, which connect the gangrenous with the sound parts, are at the same time dissolved, so as to procure a separation of them.

Daily experience evinces that the flesh of animals may be as well preserved from putrefaction by vinegar as by salt. In the mean time vinegar has this good quality over salt, that it does not so much harden the fibres or vessels, nor coagulate the juices, but rather dissolves or attenuates the blood.

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## Of Burns.

THE heat of the human body seldom exceeds the ninety-sixth degree of *Fahrenbeit's* thermometer, even in the strongest men; but when the heat of the body ascends above the hundredth degree in diseases, the blood and its serum then begin to be disposed to coagulation; but if the degree of heat in the body is equal to the hundred and twentieth de-

gree of the thermometer, the serum of the blood coagulates. Heat therefore raised to so great a degree changes the disposition of our juices, though the solid parts do not as yet seem to be much injured by it. But when the heat is raised equal to that of boiling water, which is usually about two hundred and twelve degrees, then the solid parts are injured, many of them being dissolved.

Water applied to a fierce fire, hardly heats beyond the two hundred and fourteenth degree, and when once the water has acquired this degree of heat, it cannot be heated to any greater degree, however much the fire be increased beneath the water. But oil olive, and linseed oil, or the like oils expressed from seeds or fruits, cause the mercury to ascend in the thermometer to the six hundredth degree when they boil; whence we observe a great difference in the effects produced when any part is burned, by the application of boiling water or scalding oil.—And boiling pitch is still more dan-

dangerous than oil, because by its tenacity it very firmly adheres to the skin, whereas oil much sooner runs off.

It is a constant observation that when boiling water falls upon any part, it generally excites a gangrene in the place where it first touched; whereas the rest of the parts are less burnt over which the water passes successively after the former.

If any part of the body be burnt by actual fire, by gunpowder, boiling oil, or any other violent cause, the eschar will be so thick and hard, as very often to require deep scarifications, in order to set them at liberty from the adjacent sound or living parts: only the most emollient ointments can be in that case serviceable, with cataplasms and fomentations of the like nature; and all desiccative or astringent applications will be prejudicial. Even spirits of wine, which is much recommended by *Sydenham* and others for the cure of all burns, will, in this case, not only harden the  
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eschars, but also retard the cure, and frequently augment all the bad symptoms.

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*Of a Scirrhus and Cancer.*

**A**LL scirrhi are attended with hardness, without pain, and, according to *Galen*, even the worst and most incurable species of them are insensible.

A scirrhus may often arise after inflammatory diseases in parts which are not glandular, when by frequent bleedings, the vital powers are so much weakened, that the impulse of the vital humours is not sufficient to remove the obstructing particles impacted into the narrow extremities of the converging vessels, nor yet is it able to separate them by a mild suppuration. Hence perhaps it is that we so often find the lungs adhering to the pleura, and in part rendered scirrhous after a pleurisy; for the membranous parts have been observed to degenerate surprisngly in this manner,  
after



after violent inflammations in them not well cured.

A scirrhus arises from no cause more frequently than from venereal buboes tending to suppuration, and opened before they are brought to maturation: or else from a too sudden healing up of the ulcer left after such a bubo.

A scirrhus may remain a long time in several parts of the body without injury, unless the adjacent vessels be much compressed by it; but if once the old scirrhous matter, either naturally, or by an imprudent management, be put into motion, it soon degenerates into a horrid cancer.

Out of twenty women afflicted with cancers, fifteen of them are troubled with the disorder betwixt the forty-fifth and fiftieth year of their age, or if in younger personages, their usual menstrual discharges were certainly suppressed.

In order to move the voluntary muscles, a free commerce is necessary thro' the nerves betwixt the brain and muscles;

cles; if, therefore, the nerve which leads to a muscle is compressed in any part of its course from the brain by a scirrhus tumour, that muscle will become paralytic. If now a large trunk of nerves leading to some particular part of the body is compressed by such a cause, a perfect palsy will follow in that member.

If we consider the nature of a scirrhus, it will be sufficiently evident that many bad consequences may arise from it, if the humours are excited into motion thro' the circumjacent vessels, from whatever cause that increased motion may be produced; for in a scirrhus the congealed or inspissated matter is collected either in the cells, or in the complicated vascular fabrick of the gland, which may be therefore looked upon as a dead part: but the vessels filled with this impervious matter, or the follicles distended with the same, have other sound or living vessels dispersed through their membranes, which vessels being compressed or obstructed by the concreted or scirrhus matter,

matter, will render the passage of the humours through them more difficult; for though the humours were able to pass through them with a gentle motion, yet when the celerity of the circulation is increased, as, for instance, by a fever, those vessels compressed on all sides by the scirrhus cannot be dilated, though at the same time there is a greater quantity of juices to pass through them: hence follows an obstruction, and from the force of the increased motion of the humours an inflammation. For as a considerable heat must follow, from the violent attrition in the compressed vessels, a putrefaction will of consequence soon follow in the concreted matter of the scirrhus, with all those disorders which are the consequences of a cancer.

While a scirrhus is lodged in a part of the body, there must be extreme danger of its degenerating into a worse disorder, since all those causes, which are sufficient to change an indolent scirrhus into a malignant cancer, cannot be avoided by any art or prudence.

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The scirrhus part may be exposed, in persons of a good habit of body, to the vapours of warm water twice a day, and then to use gentle frictions, applying afterwards an aromatic plaister, more especially compounded of the ferulaceous gums, and those of galbanum, sagapenum, ammoniacum, &c. Fomentations and cataplasms formed of the same ingredients may be also used for the same intentions; by this method continued for several months, I with pleasure recollect several recent scirrhi of the breasts happily cured. I have likewise seen much service from a solution of *sapo Veneti* in milk, which being reduced to the consistence of a thin poultice, and laid on a sponge, was applied to the scirrhus part, and secured by applying over it a hog's bladder oiled.

*Galen* very justly observes, that a scirrhus becomes softer by the use of relaxing medicines, but does not decrease, whereas they are considerably diminished in bulk, by the application of such remedies

medies as have vinegar in their composition ; and he therefore recommends the alternate use of both.

There is, perhaps, no better internal medicine, or any of greater efficacy in the cure of scirrhi than vinegar, saturated with pure alkaline salt ; or, if to a pint of Rhenish wine be added half an ounce of the *sal card. benedict.* or of bean stalks, &c. taking half an ounce of this mixture two or three times a day.

Mercury is often found serviceable for resolving scirrhus tumours, as well by external, as by internal application ; but then it must only be in a benign and incipient scirrhus ; for when the concremented matter is compacted almost into a stony hardness, and the scirrhus begins to be malignant, no relief can be expected from the use of the strongest mercurial preparations, nor even from a mercurial salivation itself ; but rather that all things will be rendered worse, and the motion of the humours being increased by these remedies, a scirrhus will

will be the sooner changed into a cancer by these means.

Large scirrhi very rarely continue long in the breasts in an irresolveable state, before they infect the subaxillary glands in the same manner.

The scirrhus should never be pulled imprudently while it is separating; for the tension by that means made upon the nerves, will not only excite the most severe pain, but it may sometimes even produce fatal convulsions even a considerable time after the operation has been performed. Equal care ought also to be taken not to irritate the surface of the crude wound with acrid stypticks or the like, which powerfully coagulate the blood; for the grumes of concremented blood lodged in the divided veins, may pass inward through those diverging vessels to the heart and lungs, where they may give rise to a polypus. But scraped lint pressed upon the part with a suitable bandage, will be generally sufficient to answer that intention; the puff-ball, fungus,

fungus, bovista, or puff-ball, is likewise of good use to suppress the bleeding. The impossibility of resolving a scirrhus may be known from its age, the colour of the integuments being changed into a red, purple, or livid, together with its stony hardness, and the roughness or inequality of the surface of the tumour. But when to all these an itching is also joined, there is much greater danger that the scirrhus may, in a short time, be converted into a cancer; for then the concreted parts of the scirrhus begin to be put in motion, and gently distended by the nerves dispersed through its substance, from whence an agreeable titillation follows, and at length a troublesome itching.—If a pain ensues soon upon this itching, the danger is still the greater. When mercurials are applied to a scirrhus, care should be taken to avoid a salivation, which might be unexpectedly raised, and would always be prejudicial in this case, since the motion of the humours would be increased by

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that means, without a possibility of resolving the scirrhus concretion; and the acrimony of the humours being thereby farther increased, a scirrhus would consequently quickly degenerate into a cancer. Pain is the distinguishing sign of a cancer.

So long as the integuments of a cancer are not yet eroded, but that it remains as yet confined in its proper integuments, it is said to be an occult cancer; but when it is in such a state of malignity as to corrode the integuments, and discharge a sanies or foul matter, it is then termed an open or ulcerated cancer.

Of all pains that is the worst which feels to the patient like actual fire burning within the scirrhus; for then the integuments of the occult cancer are gradually distended by the increasing of its bulk, and eroded by its greater acrimony.

*Galen* very justly observes, that putrefaction arises from two causes; either



ther from a weakness of the concoctive faculty, which is not capable of performing a better change in the humours, during their state of putrescence, or else from the great malignity of the humours, which cannot be conquered by the concoctive faculty, however strong it may be. Now both these causes concur in a cancer; for the efficacy of the vital blood and humours, upon which *Galen's* concoctive faculty depends, is here little or nothing, or at most but very weak, whereas the malignity of the matter to be overcome by this weak faculty is very great. They therefore delude the unfortunate patient with false hopes, who assert that the matter of a cancer may be brought to resolution and suppuration, and reduced into pus by boasted *arcana*.

Cancers of the uterus, especially when they are ulcerated, are incurable.

*Of the Diseases of the Bones.*

**H**AVERS says, that in an *os femoris* he had seen the fides in the middle of the bone, before any of the *lamellæ* were parted off, five times thicker than in the head of the same bone. But in a like *os femoris*, which I have by me curiously prepared, the fides in the middle are at least twenty times thicker than the thin boney covering, with which the head of the bone, the bigger *trochanter*, and the lower part of it that is articulated with the *tibia*, are invested. Hence it is evident, why the parts of the bone, which lie near the joints, are most frequently subject to the like diseases with the softer parts: and for the same reason much worse consequences are apprehended in fractures, if they happen in the broader part of the bone nearer the joints, on account of the many vessels that are injured, and the effusion and corruption of the liquids.

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The medullary oil contained in the vesicles, which are found in the cellular part of the bones, seems to have a two-fold use, viz. to lubricate the joints, and to diffuse itself between the lamellæ, in order to prevent the bones from becoming too dry. For which reason, if either thro' diseases, or old age, this oil should chance to fail, the joints are moved with difficulty and grow apt to crackle; and the bones, being no longer lubricated by it, become more liable to be broken by every flight injury.

The use of the internal periosteum of the bones seems to be, not only to convey the arterial vessels into the medullary vesicles, and receive the veins returning thence, but also to supply the bone itself with life and nourishment, by the vessels which it transmits into the substance of the bone, and likewise receives from thence. And does not this seem conformable to some surprising observations which have occurred in diseases of the bones? *Ruyseh* has given the description

and figure of a curious bone in the arm, which contained within its cavity a boney pipe, so intirely separated from the external substance of the bone, as to be capable of being moved any way. In this case it seems not at all improbable that the internal part of the bone, which more immediately receives benefit from the internal periosteum, was affected with some disorder, that had its first rise in the internal periosteum, and that from thence the internal hollow part of the bone seceded from the external part that was left behind.

*Du Verney* has proved that there are nerves in the marrow. He plainly discovered a nerve passing to the marrow with an artery and a vein through the substance of the bone, and observed that these three vessels are all included in one common sheath, which is a production of the periosteum. Besides, he has demonstrated by manifest experiments, that the marrow is sensible of pain. For in the hospitals, upon reviewing the dressings

sings after the amputation of a limb, he frequently ordered his assistants to press something against the marrow as it lay exposed, and the patient always expressed a strong sense of pain. And to leave no room for doubt concerning this, he cut off the leg of a living animal before the members of the Royal Academy of *Paris*, and after waiting a while, till the cruel pain which attended the operation was over, he thrust a probe into the marrow, and immediately the animal expressed a sense of the most exquisite pain. This experiment he tried frequently, and with repeated success. Whatever impedes the motion of the medullary oil, will cause its stagnation. All oleaginous substances, however mild, are spontaneously disposed to become exceedingly acrimonious, some sooner, others later. The oil of sweet almonds, which is so extremely mild when fresh drawn, will in the summer time turn so acrid within a few days, as to feel hot in the mouth while it is swallowed down. Butter

likewise is apt to turn in the same manner, though not altogether so speedily. A caries is the worst malady to which the bones are subject, and indicates an almost total corruption or erosion of them; slighter disorders of the bones are usually cured by exfoliation, the corrupted lamellæ separating from each other: a caries never can, but must be removed by incision or caustick, till you come to the sound parts.

There is no question but that the marrow may be injured by violent contusions and fractures of the bones. But when, without any external injury, the medullary oil becomes corrupted from an inward cause, then the disease is generally termed a *spina ventosa*; which disease was first described by the famous *Arabian* physician *Rhazes*, and so named, because it consisted in a corrosion and corruption of the bone, and attended with acute pain and swelling.—But when a corruption of the bone, beginning externally, spreads inwards, even tho' it should infect the marrow, we shall  
still

still call it a caries of the bone. This corruption of the bone, which owes its rise to the medullary substance being first affected, is no where to be found in any of the ancient *Greek* writers. It is greatly to be lamented, that this disorder is frequently neglected so long, that the bone is entirely corrupted, and the tumour begins to appear in the flesh and muscles: for which reason great care should be taken to endeavour at a discovery as much as possible, in the first beginning. 'Tis plain, indeed, that this must be extremely difficult, if we consider how deep this disease lies within the bones. The following observations, however, may assist us greatly in the investigation of it. If the patient is known to labour under such an ill habit, as by experience we find is most frequently apt to affect the bones; such, for instance, as the venereal disease, the scurvy, and the rickets in younger persons, which last distemper often gives room to suspect a latent venereal taint; from

from these particulars we may know, that the causes which predispose to this distemper, do actually subsist in the body. But we have scarce any other distinguishing sign of the presence of the disease, except that of an obstinate, excessive pain, which lies very deep, and as the patients usually express it, is fixed in the bone, attended with a *gnawing pain*. This pain is farther increased by the warmth of the bed, by violent exercise, or the free use of wine or cordials; and yet though the part affected be pressed or rubbed ever so hard, no increase of pain shall follow upon it; and we may the less wonder at it, because the bone intervenes, and by its hardness prevents any external application from acting upon the place affected. These are the signs of the disease in its first stages; but when the bone once comes to be eroded, and the external periosteum to be affected, the pain increases, and grows much more intense upon the least roughness used outwardly to the part; and then



then there arises a soft tumour in the muscular flesh ; though generally before this the very substance of the bone shall rise and swell, in which case the disease is easily to be distinguished, though too late, because the whole substance of the bone being corrupted, will either spontaneously fall off from the parts wherein there is life, or must be taken away by incision or caustick.

The mildest of all the diseases to which the bones are subject, are those which begin in the external periosteum. Exostoses arising from external injuries are seldom cured, unless they are capable of being removed by manual operation.— Those arising from internal causes are often cured by a removal of the cause, or at least are very much decreased in bulk.

An ancylosis is always difficult of cure. If it arises from the callus of a bone broke near the joint, and has already acquired the hardness of bone, it is then incurable ; as also if it proceeds from an  
exostosis

or concretion of the articulated bones. But if it owes its original to an inspissation of the liniment of *Havers*, or the stiffness of the ligaments, there is reason to hope that it may be cured.

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*Of Internal DISEASES, and of FEVERS  
in general.*

**WE** may almost venture to affirm, that no person can live without a fever, and that few have died without one.

The greatest caution is necessary in searching out the very hidden nature of a fever. In this case we are not to assume any thing from hypotheses, previously contrived, however ingenious they may seem; but we are only to consider the appearances of the fever present in the body, and to weigh each of them apart, that by afterwards comparing them together, we may by just reasoning be led from them to understand the proximate cause

cause of a fever. Whilst the most acute philosophers indulge their speculations in searching after the causes of natural things, they often entertain us with splendid theories, and wonderful productions of mere imagination, yet without doing any great mischief; but when this method is taken to discover the nature of diseases, the curative part may be founded upon a false hypothesis, which would be turning a matter of the greatest importance, and of the most serious consideration, into joke and pastime; namely, what relates to the life and health of ourselves, and the rest of mankind.

There are three symptoms only observed which are common to all fevers, namely, a *shivering*, a *quick pulse*, and *beat*. A shivering is meant by physicians to signify that shaking of the whole body, which arises from a sense of cold, as when a person being warm suddenly exposes himself to the cold air. This sense of cold is always observed to attend in every fever arising from internal causes.

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To denominate a fever acute, it is necessary that its swift course be joined with danger; but in order to denominate a fever slow, the small advance which it makes is sufficient, whether life be in danger or not. For a quartan hardly ever proves fatal, unless by some error in the patient or physician, and ought therefore to be ranked among diseases of a long continuance, as well as a hectic fever, from whence very few escape. *Celsus* therefore very properly defines diseases of long continuance to be those *sub quibus neque sanitas in propinquo neque exitium est.* “In which neither health nor death are near at hand.”

Since epidemical fevers arise from some common cause, they have usually almost the same course and symptoms, and require the same method of cure in all: but particular fevers, arising from very different, and often opposite causes, require to be treated in a different manner in different people.—Even *Hippocrates* has  
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has taken notice of this distinction in fevers: but we much more frequently meet with acute fevers epidemical, and slow fevers more rarely, among which last quartans are the chief.

We may by constant observation discover in every fever, that the velocity of the pulse is increased, and that therefore the heart contracts more frequently or swiftly; and thence again, that those causes from whence the contraction of the heart results, are increased. But in what manner the causes act, which excite the heart to a quicker contraction, and after what manner, for example, an intermitting tertian is renewed every other day, when it afforded no action or appearances at all on the intermediate day, these are hitherto concealed from all of us; for all that we know of the nature of a fever, we discover only by its inseparable effects and appearances; nor can human understanding proceed farther in her investigation.

Since

Since the dilatation of the artery is synchronous with the contraction of the heart, the pulse cannot be accelerated unless the contraction of the heart becomes quicker at the same time, as that is the only and entire cause of the dilatation of the arteries. For all that has been said by some authors concerning ebullition, fermentation, or effervescence of the blood, &c. in the cavities of the heart, has been proved to be false, and contrary to experiment; and it appears most evident, that the cause propelling the blood from the heart into the arteries, does not reside in the blood itself, but in the heart, which immediately receives the blood. A fever may be therefore deservedly called a disease in the heart, since in every fever the action of that muscular organ is changed, namely, by being brought into more frequent or quicker contractions.

It appears from the principles of anatomy and physiology, that the muscular motion of the heart renders its own  
muscular

muscular fibres paralytic ; and that by this means the whole heart is so disposed, that a new contraction must follow the moment after ; for the nerves sent to the heart are so situated, that they must be compressed by the dilatation of the largest arteries distended by the blood expelled from the heart, the aorta and pulmonary artery, during the dilatation of which the venous sinusses and auricles of the heart are likewise distended ; and therefore the influx of the spirits through the nerves into the muscular fibres of the heart, is thus impeded, while at the same time all the blood is expressed thro' the vessels dispersed through the substance of the heart ; which therefore looks pale, during its systole. Thus are the two causes, absolutely required to muscular motion, intercepted or removed ; namely, the influx of spirits and arterial blood. But in that moment of time, while the heart, as it were paralytic, has its cavities filled by the influent venal blood, the aorta is

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contracted, and with great force urges the blood through the orifices of the coronary arteries throughout the whole substance of the heart, and at the same time the nerves are no longer compressed, as the arteries are then contracted, and the sinusses and auricles emptied, whence they freely transmit the spirits sent from the cerebellum through the cardiac nerves to the heart; and therefore the two causes of muscular motion will be renewed, and thence the contraction of the heart will be instantly repeated.

A quartan is usually accompanied, in the beginning of a fit, with a violent and long-continued coldness; but in the beginning of a fever of one day's continuance, there is often only a very slight sense of coldness perceived.

There very often is so great a weakness observed in the pulse, during the cold fit of a fever, that the stroke of the artery is hardly perceptible to the touch, and this more especially in old people afflicted with the quartan fever in the  
winter



winter time ; and then also the quickness of the pulse is so great, that it seems rather to tremble, than to be made up of a distinct dilatation and contraction. But where there is so great a celerity of the pulse, as to be ten times quicker than what is natural, nobody can distinguish its numbers ; but there is only a surprising undulatory motion perceived by the finger ; and if the hand be applied to the breast, the heart seems to tremble, instead of beating powerfully against the ribs, as is usual in health : and in this case, sometimes the artery will dilate more powerfully, and then again appear extremely weak and quick ; and sometimes a true intermission of the pulse may be discerned in this case ; and then the patient often complains in such a fever, that his eyes are dim, or that he cannot hear, or scarcely feel. In this case the same thing happens as before death in the dissection of living animals ; for we then see that the

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heart, being no longer able to expel its contained blood at each systole, trembles and evacuates only a part, not being able to dilate the arteries: in the mean time the auricles and venous sinusses are greatly distended; and after a few moments become suddenly contracted, forcibly projecting their blood into the ventricles of the heart, which being then irritated by the quantity and impetus of the influent venal blood, is very powerfully contracted; then again it trembles and languishes until it be excited by the same cause, or till all motion ceases by the death of the animal. For the greatest anxiety, most difficult respiration, and even the struggles of life with death, seem frequently to attend at this time of the fever. Hence Galen justly pronounces, *In quartanarum principiis videbitur tibi arteria quodammodo esse alligata, atque ad interiora retracta, & prohiberi, ne insurgat.* "That in the beginning of quartans, the artery will seem,

in a manner, tied up, and drawn inward so as to prevent it from dilating. From what has been said, it is easy to explain another passage in *Galen*, where he places the most certain sign of an incipient quartan, in a slowness and smallness of the pulse; for in the height of the cold fit, the artery is often agitated with a tremulous and obscure motion; and then after a few moments one shall be able to perceive a single and violent stroke or dilatation of the artery, which will then cease and return again soon after: so that if one numbers those violent pulsations, the artery will seem to beat slow, when at the same time, during the supposed intervals, it is extremely quick and weak in its motion. Add to this, that sometimes for a few moments the motion of the artery entirely ceases, and a true syncope takes place. Hence it appears in how great danger the patient is at that time, and why death sometimes happens in the cold fit.

The lively colour observed in a healthy person arises from the vessels filled with red blood; so that when the force of the heart begins to be weakened from any cause, not being able to propel the blood to the extremities of the body, and the arteries at that time contracting by their own elasticity, especially towards their extremities, which are the least urged by the force of the heart, the blood is by that means repelled from the smaller into the larger branches; therefore the subcutaneous arteries, which are some of the smallest in the body, will be in a great measure emptied, whence a paleness will arise.

It is evident that the parts are more flexible, in proportion to the greater abundance of humours, with respect to the solid parts; but in the beginning of a fever, the force of the heart being weakened, cannot fill the smallest vessels in the extreme part of the body; and therefore these being contracted, and repelling back their contained juices into  
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the larger vessels, this will be one cause of the rigor or stiffness in the beginning of fevers. Besides this, the cold which contracts every thing, will increase the cohesion of the solid parts, and consequently augment their stiffness: the truth of this every one has experienced, whose hands have been much exposed to the cold in winter time; in consequence of which the fingers have been so stiff, as to be scarce able to take hold of any thing. Since therefore these two causes concur, it is no wonder that a very great stiffness arises in the time of the cold fit in fevers.

In intermitting fevers, if the patient is not very weak, or advanced in years, the hot fit is usually so much the more intense, as the preceding cold was more violent.

It is one of the best signs if the febrile heat is equally diffused throughout the whole body, even to the extremities; for it denotes that the vessels are pervious, and that the blood has a free circulation;

but in the worst fevers, which are then commonly fatal, there sometimes happens an intense heat perceived about the vital organs, while, at the same time, the extreme parts of the body are cold; and it then denotes that the circulation is deficient in the extreme parts of the body, and that the impervious blood begins to stagnate or accumulate about the vital viscera; while, in the mean time, the heart being more swiftly contracted, propels the blood with a great velocity through the vessels, which are yet pervious in the parts next adjacent.

It is a very dangerous disorder when the stomach is extremely distended by too great a quantity of aliments rarefied by heat and stagnation; for then both orifices of the stomach have been observed to contract themselves violently with a convulsive force; whence has followed intolerable anxiety, fruitless endeavours to vomit, and lastly, a fatal apoplexy, while the trunk of the descending aorta being pressed by the distended stomach,

stomach, urges blood too forcibly, and in too great a quantity upon the encephalon; so that the vessels being extremely turgid, are sometimes burst.

When in ardent fevers the blood, by an inflammatory tenacity, stagnates impervious in the smallest arteries, these last being distended, compress the adjacent secretory and excretory small ducts; and hence the whole external skin, tongue, internal parts of the mouth, fauces, &c. are invaded with a burning heat; and when the patient recovers from these most dangerous diseases, almost the first symptom of nature's overcoming the disease, is a return of moisture into all these parts.

It is a general indication in every fever, so to moderate the force of it, that it may not, by destroying the solids, and thickening the fluids, produce inflammations, suppurations, gangrenes, &c. nor yet to let it subside so low as to be incapable of attenuating, changing, moving, and expelling the morbid matter. Nor is it

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possible

possible sufficiently to inculcate this general and practical rule, which is of the greatest moment; because many have too ill an opinion of the name of *fever*, and believe that it ought ever to be engaged with the most forcible methods; when at the same time it appears from the writings of the ancients, and observations of the best physicians, that a fever often most happily cures itself, provided it be kept under a due regulation or moderate degree.

A fever may terminate in health two ways; as when the morbid matter is so changed by the force of the fever itself, that being assimilated with the healthy humours, it may be freely carried through the vessels, without any disturbance to the equable circulation; or else, the same morbid matter being subdued, and rendered pervious by the force of the fever, is afterwards expelled out of the body, and this either by an insensible or a sensible evacuation.

*Sweats, vomiting, and diarrhœa,* are evacuations only serviceable, inasmuch  
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as they expel the febrile matter, either wholly or in part from the body; whereby the disease may be entirely removed, or at least alleviated. The principal sign whereby the usefulness of these evacuations is known, is derived from their effects. But there is great reason to hope that a vomiting, sweat, or diarrhœa, will be useful, if they happen after the concoction or height of the disease, when nature has got the better of the disease; for those which happen in the increase of the disease, are rather symptomatical than critical evacuations, and often do more hurt than service.

There are two principles upon which the diagnosis of diseases are founded; the first depends on a knowledge of the preceding causes, which are such as appear to have produced the same disease before, and the second is a knowledge of the disease in its own nature and present effects.

We should always remember the admonition of *Hippocrates*, *That a much more dangerous error may be committed in defect than in excess.*

Old people bear abstinence the most easily; and this is indeed true while they are in health, because they are nourished neither for encrease nor strength, but only to support their being; and in these the cavities of a great number of vessels are either entirely closed up or very much lessened; whence a less quantity is required of humours to flow through them; add to this, that all the vessels being now more rigid, yield less to the impelled liquids; and many of the humours being expelled from the body in fevers, will occasion dryness from this diminution in the quantity of liquids: *Quia naturæ progressum qui est ad siccitatem, effugere non licet, ideo senescimus & corrumpimur:* “As we cannot avoid the course of nature, which tends to dryness, we therefore grow old, decay, and die;” and therefore the disorders

disorders happening in old age will be encreased by a fever, if the patient is not relieved by a soft and moistening diet. But here more especially the food must be given often, and in small quantities, because the vital strength which is weak in old people, would be destroyed by greater quantities; and they require but small supplies, provided they are given continually; add to this, that abstinence or fasting in great old age, often brings on a fatal syncope; because the quantity of humours being lessened, the rigid vessels do not contract themselves in proportion; whence there will be no action of the vessels upon their contained fluids; and thus one of the causes of their circulation through the vessels will cease, whence a stagnation and death; for the heart, by expelling the blood from its cavities, dilates the arteries, but the very next moment the arteries contracting ought to promote the impulse of the blood to continue the circulation; and to do this it is necessary for the sides of  
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the arteries to remain contiguous to their contained humours; but the vessels, now rendered extremely rigid in old age, and the quantity of the humours being also dissipated by the fever, it is evident that this effect cannot easily follow. And thus the reason is evident, why abstinence is so prejudicial to old people in fevers.

In consumptive people, whose lungs waste away by a slow suppuration, there is a continual slight fever, which often encreases every day at the time when fresh chyle is plentifully supplied, and driven together with the blood through the lungs; some people therefore, believing this fever to be of the intermitting kind, have made trials of the virtues of the bark, but always with the most fatal success; for the purulent cause remaining, the febrile motion must necessarily be suppressed, whereby the collected matter ought to have been expelled; whence the greatest anxieties, and sometimes death itself has followed from that practice. For the whole cure of such a

disorder consists in washing out, as it were, and detarging the purulent matter; and then to consolidate the parts thus cleansed from the matter, as in the cure of a clean wound.

The sanguiferous veins being more lax may be always more easily distended than the arteries; but when these veins are filled with an encreased quantity of blood, the arteries will meet with more difficulty of discharging their blood into them; whence the arteries themselves will become more distended. But since, in most parts of the body, the arteries and veins accompany each other, therefore the distended arteries will press upon the less resisting veins, and by that means propel the blood through them towards the right ventricle of the heart; from whence again it will soon be propelled into the distended arteries. Hence it is evident, that at length almost all the blood will be accumulated in the arteries of those who are highly plethorick. But when the contraction of the heart urges  
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the blood into the now very full arteries, the serous and lymphatic arteries, which arise from the sanguiferous, will be so far dilated, as to admit the red blood, as appears evidently in the tunica adnata of the eye, and in the whole skin, which is often very red in plethoric people; and thence these vessels also being dilated, will compress the smaller adjacent arteriolæ; but when this is also accompanied with a fever, the heat thence arising rarifies the blood, and therefore all those evils will be consequently increased: thus we sometimes see the whole body suffused with redness, while at the same time the roughness and dryness of the skin, tongue, fauces, and internal part of the mouth, plainly prove that the smaller vessels are impervious, being compressed by a true *ἑλκίς*, or strangulation, from the larger vessels being over-turgid with too much red blood.

The more severe a cold fit is, in the beginning of a fever, so much the more dangerous it is; for this coldness denotes  
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diminution of the circulation, and therefore the greater the coldness, the less the circulation, and the less the circulation, the nearer the disease approaches unto death, wherein the circulation wholly ceases; but if at length the vital powers overcome this coldness, being irritated by the same cause which produced the fever, they render the circulatory motion so violent or swift, and excite so strong a heat, that the worst consequences of every kind may be feared: for the very tender vessels of the encephalon and lungs cannot bear so great a force, without the greatest danger; and the great heat following after the most intense cold may dissipate the more fluid parts of the humours, and inspissate the rest; whence there is the greatest danger, lest the humours becoming impervious, should adhere to the narrow extremities of the arteries, whence the worst inflammation and gangrenes might be justly feared from so violent an impulse of the humours urging from behind obstructions in such a fever.

The reason why a severe tremor is bad in fevers, is because it denotes that both the nervous and arterial fluid are either deficient or impervious ; and at the same time such a violent trembling arising much in the beginning of a fever, denotes much strength of the efficient cause which is capable of exciting so great a disturbance, in a body which has been hitherto healthy ; and likewise because a great trembling supposes obstruction opposing the circulation of the humours, therefore many bad consequences are justly to be feared from thence. Moreover, tremblings which arise in the course of acute fevers or other diseases, unless they proceed or accompany critical evacuations, are often of the very worst import, because they generally denote, that the matter of the disease inclines to the head, and there disturbs the equable motion of the nervous fluid in the origin itself of all the nerves, that is in the medullary substance of the encephalon.

Anxiety



Anxiety arising in an acute disease always deserves the strictest attention, since it is often attended with so many bad consequences. Physicians often repeat too late the errors committed in this respect, when for want of caution, and through hurry of business, they have neglected the complaints from this symptom. A diligent enquiry ought therefore to be always made, after the cause of anxiety, and the part of the body wherein it is seated; for the greatest danger attends anxiety, arising from the course of the blood impeded through the pulmonary arteries: but that is less dangerous which proceeds from an obstructed passage of the blood through the *vena portarum*, though even thence the worst consequences may follow: but that kind of anxiety is of all the least dangerous which arises from flatulencies and a spasmodick contraction of the vessels, thro' an inordinate motion of the spirits, as is often observed in hysterical and hypochondriacal people.

The reason why a spasmodick, or nervous anxiety, is but little dangerous while an inflammatory one is extremely so, is, that because in the first case when the anxiety has so far encreased, as to bring on a fainting, the spasm goes off, while the person faints by the convulsive anguish; because the heart then cannot propel the blood with its due force to the encephalon, and therefore it cannot move the spirits through the nerves; whence the inordinate influx of them into certain parts will cease and relieve the anguish. This is evident by daily observation in hysterical women, when the muscles of the gula being contracted with a cramp, retain the air in the tube of the œsophagus that was before received into it, where expanding by the heat of the parts it occasions a tumour, and compresses all the adjacent parts with a sense as it were of immediate suffocation; for so soon as the women begin to faint, the cramp ceases, and the confined air is discharged by  
ructus.

ructus, with a considerable noise; whereupon the whole disorder goes off.

But in an inflammatory anxiety, the impervious blood adhering to the extremities of the arteries, and the blood being driven by the heart against the obstruction, expels the most fluid parts, and condenses the rest; whence the cause of the disorder is increased every moment, and death soon follows, unless the inflammatory obstructing matter can be speedily dissolved, which it often cannot.

Frequent fomenting, washing, and gargling the nostrils, mouth, and fauces with warm watery, subacid, and nitrous liquors is of the greatest moment in the cure of fevers; for then the thirst often proceeds from dryness and imperviousness of the blood; and then there is the greatest danger from such a disposition of the blood to be feared in the vessels of the encephalon and lungs: when therefore the patient contains such warm drinks in his mouth, they cleanse the fauces, moisten these dry parts, and

relax the lungs with a warm vapour; more especially if the vapours of hot water are drawn through the nose: but also at the same time the external branches of the carotid artery distributed through these parts, are thus relaxed, and by that means the impulse and pressure of the blood is turned off from the internal parts of the head; add to this, that the continual moistening of these parts most happily allays the thirst.

The first passages are by the law of nature lined with a mucus from the mouth to the anus, which not only gives a lubricity to the internal surface of these parts, but likewise defends them from being easily injured by the rough bodies swallowed, or acrid substances taken into the stomach. The mucus having served these uses is by degrees deterged, and attenuated, more especially by the sapo-naceous bile, till at length it is discharged together with the fæces by stool; but when this mucus is more tenacious than usual, or the bile weaker or smaller in quantity,

it is by degrees accumulated, oppresses the stomach, and excites an irritation; whence proceeds a troublesome nausea, which is often of long continuance. This disorder is very familiar with men of letters, especially those advanced in years; for as these lead too sedentary a life, the abdominal viscera are less agitated by respiration; the bile becomes inactive, and is often so much inspissated, as to be scarcely able to pass out through the narrow neck of the gall bladder wherein it is confined; old people are for this reason, *cæteris paribus*, more subject to this mucus than young people.

There is a wonderful consent betwixt the stomach and encephalon, insomuch, that the one being disturbed easily produces a nausea and vomiting in the other. A putrid alkaline acrimony will arise from a nausea too long continued. Vomits should never be given where there is just reason to suspect an inflammation in the stomach, or any of the adjacent viscera.

Common air entering the human body constitutes the material cause of belching and flatus.

If a plenty of air, or such substances as suddenly produce a great quantity of elastic matter, be confined in the œsophagus, stomach, or intestines, &c. and at the same time this elastic flatus is intercepted by a spasmodick constriction of the fibres, either from some acrid irritation, or a disturbed motion of the spirits, the constriction being so great as to retain the flatus from escaping; in this case the rarefaction will be increased by the heat and motion of the body itself, and more elastic matter of the same nature will be added to the first from the flatulent bodies which produced it; whence the confined membranes will be gradually more and more distended, and the most dreadful maladies will ensue. This distension of the parts being thus gradually encreased, will produce the most intolerable pains, at the same time also the blood vessels dispersed through  
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the membranes, thus distended, being compressed or straitened, will occasion the most violent inflammation and suppression of all the vital circulation of the humours; whence a sudden gangrene, which so frequently proves mortal in these parts. Moreover, the intestines, a long time distracted by wind, may become paralytic, and then they never afterwards return to their natural contraction, but what is taken into the body will be accumulated as in a dilated bag, and being retained there a long time, will give rise to new disorders. Hence the iliac passion, or intorsusception of the intestines, when the low part, which is not distended, enters into the dilated part of the intestine immediately above. HIPPOCRATES therefore very justly observes, that iliac passions, griping of the guts, and other obstinate diseases, arise from flatulencies.

There seldom is any danger in cholics or gripes of the abdomen, if unattended with a fever.

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When we endeavour to remove the causes of flatus, we should ever be mindful if a spasm attends at the same time, that nothing be given which may increase it.

The motion of our fluids through the vessels proceeds from two causes, namely, the heart impelling the blood into the converging arteries, and distending them; and afterwards the reaction of the arteries, whereby they resist dilatation, and contract themselves again at the time when the heart is dilating. But that quantity of the blood which is projected out of the ventricles of the heart into the arteries, would not be sufficient to dilate them, even in the most remote parts of the body, unless the arteries were already full at the time when the blood is impelled into them by the contraction of the heart. When therefore there is so great a loss of the fluids that the sides of the arteries, when they are most contracted, do not come into contact in every point with their contained fluid;



fluid; in that case the blood expelled from the heart would fill the arteries without dilating them, and the moment after, when the heart is dilating, the arteries could not contract, because they were not dilated; and therefore the blood contained in their cavities would stagnate and not be sent forward, till by repeated actions of the heart it had expelled a sufficient quantity of blood to fill them, so as to be dilated by the next systole of the heart. The natural motion, therefore, of the humours through the vessels being thus weakened, there will be a deficiency of the quantity of the blood to be propelled through the vessels of the encephalon, the pressure will be diminished whereby the fluids are urged into and through the secretory vessels in the cortical part of the brain, and consequently there will be a deficiency in the secretion of the spirits, and their equable motion thro' the nerves; whence weakness must necessarily follow. The red parts of the blood, consisting of  
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the largest globules contained in our humours, and moved through the largest vessels of the body, are the best disposed to produce heat by attrition, and to retain the heat longest after it is once raised: for the more dense the matter of which any body is composed, or the greater its bulk, and the more exactly spherical its figure, so much the more is it disposed to retain fire or heat a longer time in itself. But all these properties are observed chiefly in the red particles of the blood, if we compare them with the other constituent parts or elements of our humours. For this reason the vessels full of red blood are placed in those parts of the body where the thinnest fluids pervade the smallest vessels, to supply the deficiency of heat in the latter. Thus we know there is a great number of blood vessels dispersed through the medullary part of the encephalon, encompassing the medulla oblongata, and distributed through the plexus choroides in the ventricles of the brain.

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The principal sign of too great a mass to be moved is a large and quick pulse of the artery, while at the same time the veins are turgid, as if they were inflated; for then we know that all the blood vessels are extremely full: for the pulse of the arteries may be sufficiently large and quick, though in the mean time there is no increased quantity of the liquid to be moved, namely, if the blood, thickened with an inflammatory density, passes with greater difficulty through the extremities of the arteries. — But then the veins are emptied, because they receive less, and almost all the blood is accumulated in the arteries. But on the contrary, in languid diseases, the humours are often accumulated in the veins, which are more easily distended, while in the mean time there is a less quantity of them flowing through the arteries. But when both the arteries and veins are turgid at the same time, we know for certain that the mass of humours to be moved is increased. But  
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for a greater quantity of humours to flow in the same time through a little number of vessels, the celerity of the moving liquid must of necessity be increased; and therefore in this case there will be a quickness of the pulse.

If the effects of heat be well considered, the reason will evidently appear why it may produce a great many and suddenly fatal diseases: for the integrity of all the vital, natural, and animal functions depends on a free motion of the humours through the vessels. But, by an increased heat, those motions are disturbed or entirely abolished, whether this happens either from a rupture of the smaller vessels, or from the larger vessels distended with impervious matter, and compressing the smaller, &c.

When therefore these injuries happen from too great a heat in those parts of the body upon which life more immediately depends, speedy death ensues; and this most suddenly of all, if the serum of the blood begins to coagulate by the immense  
increase

increase of the heat : for in a little time it will adhere impervious in the smallest vessels of the lungs, and intercept all the passage of the blood from the right to the left ventricle of the heart through the lungs ; whence a most acute and fatal peripneumony will arise. The same thing will happen if the fabrick of the cerebellum is either destroyed, or so stuffed up with impervious humours as to hinder the influx of the vital spirits through the nerves from the cerebellum to the heart. Many were of opinion that the intolerable heat of fevers ought to be ascribed to putrefaction as the cause ; but I believe it will appear to every one who considers it, that putrefaction is rather the effect of heat in our bodies, and not the cause of it ; and even that putrefaction once formed does not excite heat by its own proper force, but only inasmuch as the celerity of the humours through the vessels, and consequently their attrition, are increased.

It has been customary to understand  
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by the name of præcordia all those parts lodged in that space which may be conceived betwixt the diaphragm and the perpendicular plane erected about the end of the diaphragm upon the loins, dividing the abdomen in two; and therefore the term præcordia includes the cardia, hypochondria, and epigastrium. A faithful observation in diseases has taught us, that foul humours lodged about the præcordia, (whether from an indigestible matter taken in and corrupted, or from a morbid contagion, or from humours spontaneously separated and not discharged, but stagnating and corrupting there) may disturb all the actions of the brain, and produce deliria, ravings, and other symptoms of the worst consequence. After giving a vomit, by discharging these corrupt humours, we may frequently observe many patients to recover from these deliria: the signs by which we may know in general, that these foul humours are collected about the præcordia, are a *foul tongue, a bitter disagree-*

able taste in the mouth, nausea, vomiting, and oppression or anxiety; and this diagnosis is the more certain, if there be no other signs to lead us to believe there are any other causes from whence a delirium may be expected.

Warm bathing the feet, with the application of blisters to them, and to the hams, with friction upon the same parts, are here useful; all these derive the impetus and quantity of the blood towards the lower parts of the body, and consequently divert it from the head, or encephalon. For the blood propelled from the heart by the aorta ascends partly upward, and partly downward by the descending trunk of the aorta; if therefore the vessels of the lower parts are relaxed, the resistance to the blood flowing into those vessels will be lessened; whence it is evident a greater quantity of blood must flow towards the lower parts, by which means a true revulsion will be made from the encephalon. But for this purpose a

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vapour bath is principally of use, because it more powerfully relaxes and softens, while at the same time there is no danger of compressing the vessels by the weight of the fluid into which the parts are immersed. For it appears from hydrostaticks, that fluids press upon bodies immersed into them, and that this pressure increases in proportion to the height of the incumbent fluid. If therefore the feet are immersed to a small height in warm water, while at the same time care is taken to let the vapours of the water come into contact on all sides with the lower parts of the body, this intention will be fairly answered; and at the same time, likewise, the erect posture of the body will be very serviceable. But the tumour and redness of the parts exposed to such a bath sufficiently prove that the humours are derived, in a greater quantity, towards them. But blisters act inasmuch as by their stimulus they irritate the vessels of the part to which they are applied into more frequent and violent



lent contractions; that is to say, they accelerate the motion of the vital humours through the vessels, which by this means emptying themselves oftener in the same time, they will transmit a greater quantity of fluids; but frictions, by emptying the veins, make way for the blood to pass more easily through the arteries, to empty themselves into the depleted veins; and therefore both the quantity and impetus of the vital humours will be derived towards those parts to which the frictions are applied. But it is very evident that epispasticks, if made of the more acrid substances, and frictions, ought to be applied with such moderation, as only to increase the motion of the humours through the lower parts, without increasing it much thro' the whole body.

By emollient clysters often applied, the fæces are cleared away; the vessels of the intestines relaxed and fomented; the impulse of the humours is consequently diverted from the head, while at the

same time a diluent fluid may by these passages be communicated to the blood to advantage. In a fierce delirium therefore, such a clyster ought to be injected every three hours till the disorder abates; but care is to be taken in the decline of the disease not to weaken the patient's strength too much by the too frequent use of them. Purges in this case may be useful two ways; first, inasmuch as they evacuate the offending humours lodged about the præcordia; secondly, inasmuch as they lessen the too great impetus of the arterial blood, and derive it from the head towards other parts; and at the same time they diminish the too great quantity of the fluids distending the vessels; but in this case those purges are principally recommended which dissolve the humours without exciting any great disturbance in the body.

The bringing down of the hæmorrhoids has always been observed to be useful in diseases of the head; and no wonder, since the hæmorrhoidal vessels  
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and carotid arteries convey the blood in opposite directions; whence a very great revulsion might be reasonably expected.

For the same reason, likewise, it will be useful to provoke the menses.—But this should be attempted by such remedies as relax and mollify the parts, (and not by emmenagogues, most of which increase the impetus and velocity of the circulation) such as by washing the feet in warm water, epispasticks and frictions; and these may be more especially attempted with hopes of success, when the usual time of this periodical discharge is at hand, or when the pains in the loins, groins, thighs, and tension in the neck, with other signs, denote that the menses are about to flow sooner than usual, as is frequently remarked in acute diseases.

But all these evacuations are only useful when the vessels are distended with too great a quantity of blood, or when the force of the circulation is too violent, and a revulsion of the humours is necessary to be made from the head; for

when in the end of acute diseases a delirium continues, though the disease has almost exhausted the patient's strength, all evacuations are then prejudicial, and an imprudent use of them is frequently attended afterwards with an incurable state of idiotism.—But a weak and small pulse, slight heat, and relaxation of the vessels readily denote that in the present case such evacuations are not to be used.

All causes whatever which too much lessen the quantity of the arterial blood to be impelled to the brain, which impede the free circulation through the vessels of the brain, obstruct the secretion of the spirits, or intercept their free motion through the nerves when secreted, may produce a coma; namely, a coma somnolenta, if all the animal actions are equally lulled by such an impediment; a coma vigil, when the motion of this most subtle fluid is not impeded through the most sensible parts, as it is through many others.

In acute diseases, when a salutary and critical hæmorrhage is about to happen  
from

from the nose, watchings or wakefulness often precede; and this because the blood is carried towards the head more plentifully and with a greater force; and we therefore at that time usually observe *a pain of the head, tension about the neck, redness of the eyes, &c.*

Convulsions subsequent to inflammations of the brain are generally fatal, because they denote that the inflammatory cause is so violent and so deeply seated in the narrow extremities of the vessels of the brain, that the medulla itself is affected.

*In diuturnis lienteriiis ructus acidus obortus, qui prius non aderat, bonum signum.—*

“ Acid belchings, happening in lienterys  
“ of a long standing, says HIPPOCRATES,  
“ which they did not attend before, are  
“ a good sign;” for it denotes that the contractile force of the stomach and intestines is in some measure returned, whereby the ingested aliments may be retained at least so long, as to degenerate into a spontaneous corruption;

ruption, and produce these acid eructations; whereas in a lientery, properly so called, every thing taken in is speedily evacuated, unaltered by stool.

The general cure of fevers requires four things; namely, the preservation of life and health in the patient; a correction or expulsion of the acrid irritating matter; a dissolution and expulsion of the febrile lentor; and lastly, a mitigation of the symptoms.

Those fevers are termed continual and putrid, wherein the humours degenerate much from their natural and healthy state, and at the same time incline to putrefaction; and hence there are various degrees of malignity observed, according to the greater or less intensity or degeneracy of them.

A dryness of the whole skin, nostrils, mouth, and tongue, arises from a dissipation of the most thin and watery juices of the blood by the febrile heat; and partly because the rest of the blood becoming impervious and adhering in the larger vessels, distends them so as to  
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compress the adjacent smaller vessels; and therefore in such patients the skin appears rough and dry, because the subcutaneous vessels distended with impervious blood compress the very subtle exhaling vessels, while at the same time there is a deficiency of the thin serous parts of the blood; the same is also true in the eyes, nose, mouth, and tongue. Hence *Hippocrates* says, that they perish with dryness who die of an ardent fever.

There are three different periods to be considered in respiration, that of inspiration, expiration, and the intermediate space betwixt both; the thickness or rareness of respiration respects the intermediate space of time, but the quickness and slowness belongs properly to inspiration and expiration.—But a large or small respiration denotes a different dilatation of the organs of respiration. The respiration, therefore, which is thick and short, denotes a quickness of the inspiration and expiration, and that there is but a very short space intermediate betwixt those  
contrary

contrary motions. But a laborious respiration denotes difficulty and trouble in the performance of these motions; but since there is so great a burning heat about the vital organs, and the blood is moved with great rapidity through the lungs, being in a manner parched up by the intense heat, it will meet with great difficulty in passing through the narrow extremities of the pulmonary artery; whence the reason is evident, why these unhappy patients breathe so quick, and with so much labour, namely, that they may receive an agreeable coolness from the inspired air, and forward the course of the blood through the lungs. A slight cough may proceed from a turgescence of the blood vessels of the lungs distended too much with impervious blood, so as to compress the air vessels of the lungs, that their surfaces rub against each other, for then such a dry and irritating cough will attend in a peripneumony.

*Galen* observes, that an exquisite ardent fever retains all the signs of an exquisite



quisite tertian, and that it differs only in not invading with a rigor or shivering, and in not coming to perfect intermissions; and that this was the reason why he ranks an ardent fever not among the synochi, or continent, but among the continual remitting fevers. But in the fevers which he calls tertianary (*τριταιοφύεες*) or semitertianary; which he likewise refers to an ardent fever; the exacerbations happen always on unequal days. Hence the ardent fever seems also to have something of the nature of an intermittent; and from hence frequently when such fevers are extended to a great length, they afterwards change into intermittents, and even sometimes when intermitting fevers spread epidemically, and appear early in the summer months, they often pass under this appearance. The blood being deprived of its thinnest parts in an ardent fever, tends to concretion, and begins to stagnate in the arteries, whence it is accumulated in those vessels, and distends them,

them, while in the mean time they prefs out only the more fluid parts of the blood into the veins; whence it appears that by opening a vein frequently in such diseases that part of the blood is removed only which is best disposed to flow thro' the vessels; whereas an hæmorrhage from the nose discharging the blood from the arteries themselves, turns off the impetus and quantity of blood, more especially from the encephalon, whose functions in these diseases are usually so much disturbed.—The best hæmorrhage is that which happens on a critical day, viz. the 4th, 7th, 11th, 14th, 17th, 21st, &c. which are legitimate critical days; but those hæmorrhages which happen on some incidental critical day, as the 3d, 5th, 6th, or 9th, are less salutary; but those happening on other days are altogether to be suspected, and the same will also hold true of the other critical evacuations.

A redness of the face, beset with drops of sweat, is a very bad sign in an  
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ardent fever, because it denotes an inflammatory spiffitude and imperviousness of the blood, and that it is either forced into other improper vessels, or else adheres about the smallest extremities of the sanguiferous arteries, and that a very small portion of it can as yet be expressed; as also that death being now at hand, the extremities of the small exhaling vessels in the skin are so relaxed, as to transmit a thick and gross sweat. This has been well observed by HIPPOCRATES, *Cæterum universalem sudorum rationem novisse oportet. Alii enim fiunt ob corporum resolutionem, alii vero ob phlegmones vehementiam*; “Moreover the general cause or  
“ reason of sweats ought to be known;  
“ for some arise from a relaxation of the  
“ parts of the body, and others from  
“ the violence of inflammation.”

A swelling under the ear, not coming to suppuration, is destructive: when parotides arise in an ardent fever, it is a sign that the febrile matter is critically deposited towards the glands there seated;  
and

and as the blood in this fever is deprived of its more fluid parts, and at the same time has acquired a greater acrimony, therefore a mild resolution of these parotides cannot be expected, inasmuch as to effect that, requires a mild state of the humours, a sedate motion of them, and the obstructing matter not to be overcompact, therefore a suppuration only can take place here, which if it is not procured, a worse manner of terminating the inflammation must be expected. But sometimes the swelled parotides suddenly disappear from the morbid matter returning again into the blood; whence the very worst returns, and even death itself may be expected to follow in ardent fevers.

It is a very just admonition of *Hippocrates*, to consider whether the fever is abated or increased; for if the fever suddenly increases when the parotides disappear, we know that the febrile matter mixing again with the blood, produces those disturbances, and that

that therefore a bad termination of the disease is to be feared. But if no such increase of the fever happens, there is reason to hope that the matter will in a little time escape by other passages, or be deposited upon some other part.—Neither yet must we believe health to be always an infallible consequence of parotides coming to suppuration in ardent fevers; for these crises, which are made by abscess or deposition, are always less safe.

A constipation of the bowels in ardent fevers is never of service; for since the bile, rendered more acrid or corrupt, kindles these fevers, and since even healthy bile is soon corrupted by a great heat, it must be evidently more useful for these foul humours to be discharged from the first passages, since otherwise, by the free access of air with heat and stagnation, they may degenerate into the most malignant putrefaction in a very short time. Hence it is that clysters are so useful in ardent fevers, not only inas-  
much

much as they dilate, relax, and cool, but also as discharge out every thing putrid lodged in the intestines. It is therefore no bad sign for the bowels to be looser than ordinary in these fevers.

An ardent fever differs from a putrid synochos or continent, inasmuch as its course is not one continued strain from the beginning to the end, but it is attended with remarkable fits of remission and exacerbation. It is distinguished from intermitting fevers, in that the force of the fever does not perfectly cease and from the slighter continual remitting fevers, by its intense heat chiefly, which is greater about the vital viscera, and more remiss towards the extreme parts, attended with unextinguishable thirst, and a dryness of the whole body.

An inflammation may arise throughout the whole body, although the blood continues to flow through the greatest number, if not through all the sanguiferous arteries. But that such an inflammation

Inflammation does attend in an ardent fever, we are taught from a redness in the face, and frequently of the whole skin, which sometimes continues even after death.—The inspection of bodies dying of this fever, demonstrates the cortical substance of the brain (in which naturally there is no red blood to be found) to be all over red, as if it were artfully injected. This is also the reason why such a great heat attends, even though such a great number of the small vessels are rendered impervious; for the red blood, inspissated by the loss of its most fluid parts, continues to be moved with a great velocity in the larger sanguiferous arteries.

They are much deceived who judge that sweat ought to be promoted, thinking thereby to evacuate all the febrile matter, because in an intermittent fever the fit goes off with such a sweat: for daily observations teach us, that those are more especially difficultly recovered from

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intermitting fevers who seem, as it were, to melt away by these most profuse sweats; neither is their cure practicable unless these sweats be first suppressed. Hence also the sweat which attends at the close of the fit, is to be moderately promoted by flesh broths, ptisans with wine, and the like, which afford plenty of liquid nourishment: but by no means by remedies, nor the heat of bed-cloaths, lest by such sweats those fluids fly off, which ought to be retained: the weakness and dejection which follow upon these profuse sweats, evidently demonstrate how prejudicial they are.

Quartan fevers, which have been disturbed by no powerful medicines, and have been gradually removed by a proper regimen in the spring season, have left people more strong and firm, and less subject to diseases, than before.—For these fevers contain a sort of epitome of that kind of life which CELSUS (in B. I. Ch. I.) recommends to some people:



ple: for intense cold is followed by great heat; during the time of the paroxysms, the patients generally have an aversion to all sorts of food, to which they often have a strong appetite on the intermediate well days: moreover, by a long-continued quartan the whole body is frequently emaciated, all the fat being dissolved and carried off by urine and the other emunctories, even as much as by mercury itself, or sudorific decoctions; whence an almost radical change of the humours is obtained, by a resolution and expulsion of the old; whence the body is best disposed for the reception and restoration of new vital matter; and thus, by a prudent management in these fevers, will the body be disposed to longevity.

If now it be considered that in the cold fit of intermitting fevers, the whole body trembles and shakes violently, often for several hours, almost as much in the internal as in the external parts; that the extremities of the arteries being contracted, propel the humours back

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into the larger trunks, as evidently appears from the paleness, and an opportunity they give for happily removing the obstructing matter adhering to the extremities of the arteries, it will not seem wonderful that many disorders should be thus relieved or removed, which are not at all affected by other medicines; more especially as soon after there follows a rapid motion of the humours through all the vessels; whereby the obstructing matter which was lodged in the viscera, being rendered moveable by the repeated concussions, is further resolved. Hence the reason appears, why these fevers so frequently remove the most inveterate disorders from the body, after they have been in vain attempted by other medicines.

The best methods recommendable towards the cure of these fevers, are such as conspire together with the disease itself, *to resolve what is concentered, to open the obstructed vessels, and thus to restore the equal and free circulation of the humours through*

*through all the vessels*: In the spring season, and in juvenile patients, the hotter medicines must not be used; autumnal fevers, on the other hand, more especially those which continue on until the winter, require warmer medicines, especially if the patient's strength is weakened by the disease, or if the body languishes by an advancing old age; for then the radix contrayerv. serpent. virgin. saffron, and the like most penetrating aromatics, are of the greatest use. In cold phlegmatic habits, alkaline salts are the best aperients, which yet are often injurious to warm and bilious people; and therefore those of the saline neutral kind are preferred, as nitre, sal polychrest. tartar. vitriolat. &c. Purges and vomits are not only useful, inasmuch as they evacuate, but also because they wonderfully stimulate and shake the frame, so as to change [its whole condition. The cort. peruvian. should never be given in fevers, where there is

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a continual fixed pain, or the sense of an inward burning heat, with other symptoms of an inflammation.

Vernal intermitting fevers are of so mild a disposition, as to require no medicines, but generally go off spontaneously. They are only observed stubborn for some time in such people, who having their blood of a very weak crasis or texture, it is so easily dissolved, that they waste away with profuse and weakening sweats; but even in these they are curable, especially by the use of the bark; but autumnal intermittents are much more difficult to remove, and often require the greatest attention of the physician, with every assistance of art, in order to cure them.

Three things are chiefly to be considered in acute inflammatory diseases; viz. the acute continual fever, the inflammation, and the organ, whose functions are injured by the present inflammation.

In a true phrenzy the brain is primarily affected in an acute continual fever; that

that is to say, the cause of the disease is not produced in some other part of the body, and translated from thence to the brain, but is seated in the brain itself, or its investing membranes, from the very first attack of the disease, although by the violence of the fever the disorder may be increased which is already seated in the brain.—In the symptomatic phrenzy, the cause lodges in some other part, and is afterwards thence translated to the encephalon.

There can be nothing more dangerous than sleeping in the open air, with the head exposed to the solar rays.

A black tongue denotes either a deficiency of the thin lymph of the blood, or that the larger vessels, distended with the impervious blood, compress the adjacent smaller ones, whence the exhaling arterial ducts placed at the surface of the tongue become dry and gangrenous; hence a black tongue, especially if it be dry at the same time, presages the very worst condition of the humours.

A considerable degeneracy of the humours is scarce ever observed, without a disturbance likewise in the functions of the encephalon at the same time.

Lethargic, comatous, and cataleptick disorders, are of the worst presage in a phrenitis.

A flux from the bowels is salutary, not only because it discharges the morbid matter, but also because it empties the vessels in the abdominal viscera of the humours which flow thither, and lessen the resistance to the impulse of the blood; and by that means happily diverts the impetus and quantity of the humours from the head, which is an event of the utmost consequence in the cure of a phrenzy.

### *Of Quincies.*

**A** Quincy may be divided into that which happens without any manifest sign of an external tumour or visible

ble in the fauces internally; and that which is attended with some tumour obvious to the senses.

This first kind of angina occurs more seldom than the rest, and only after the body has been exhausted by diseases of a long continuance, and profuse and repeated evacuations, and is observed to be very dangerous and fatal, and is attended with an apparent dryness, paleness, and shrinking of the fauces, without any signs of inflammation concealed in the internal parts; sometimes indeed a pain and redness appears in the fauces, but it is only slight; nor are the parts affected thereby swelled, but rather seem to be considerably sunk or collapsed. Hence it is sufficiently evident why this kind of quincy is seldom curable, since all hopes are placed in a speedy restitution of the lost humours, so as to fill the empty vessels with good vital juices. But even deglutition itself injured, prevents such nourishment from being commodiously taken into the body, and at  
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the same time, those things are deficient from which the assimilation of the ingested aliments may be expected, namely, a due quantity of healthy juices, and a requisite action of the vessels upon their contained fluids.

The physician must be extremely careful how he distinguishes this kind of angina from the rest, since the method of cure is so very different; sudden evacuations by bleeding, cooling purges, &c. would most certainly prove fatal in this case. An inflammatory angina may be occasioned by hard riding on horse-back against a cold wind; for when a person rides violently against a sharp wind, the cold air enters the fauces every moment, and at the same time the vessels of these parts are powerfully compressed by the resisting air directed against them in an opposite motion; by which, as well as the coldness, they are too much contracted.

When the inflammation is in the wind-pipe, it is so much the more dangerous,  
as



as it is seated nearer to the glottis and epiglottis, and it is much more so when seated about the rima of the glottis itself.

When the *styloceratohyoidei* muscles, and those others which are destined to draw up the larynx in the act of deglutition, are inflamed, it is evident enough that the most acute pain must follow. Such quincies are frequent; and the patients, if they do but attempt to swallow, are universally convulsed from the severity of the pain. But, as these muscles are deeply seated, upon inspecting the fauces, there is often no tumour to be seen; namely, when the disorder is seated in these muscles only, nor is there any tumour conspicuous externally in the neck for the same reason; but generally this disorder is seated only on one side, in which the patient has sometimes been able to point out the course and situation of the painful and inflamed muscle, at least in the beginning of the disease, for afterwards the inflammation frequently becomes universal,

versal. But this kind of quincy is easily distinguished, because respiration continues free enough, and the voice is not so sharp or shrill. Though this kind of quincy is not so fatal as others, yet is it not without danger, as well because it renders deglutition impracticable, as because the disease is frequently translated by a dangerous metastasis to the lungs.

When respiration is obstructed in an inflammatory quincy, the lungs cannot freely expand themselves, whence the right ventricle of the heart cannot readily expel its contained blood through the narrow extremities of the pulmonary artery into the left ventricle; and therefore the blood will begin to be accumulated in the lungs and right ventricle of the heart. The right auricle and venous sinus therefore will be unable to empty themselves; and the blood of consequence be likewise accumulated in these cavities. Hence the venal blood returning from the whole body through the upper and lower  
vena

vena cava, cannot enter into these cavities already filled; the veins will be consequently distended. But all the venal blood from the lips, tongue, and face, returns to the heart chiefly by the external jugular, while the blood from the interior parts of the head moves through the internal jugular vein.

When, therefore, the blood cannot pass freely through the jugular veins because of the obstructed respiration, all the blood vessels belonging to the external, as well as to the internal parts, will be more and more distended, since the arteries continue to send forward the blood, while in the mean time it cannot return by the veins. Hence the fauces, lips, tongue, &c. will be swelled; and the eyes, overcharged with blood, will look red and protuberate in a frightful manner; the tongue swelling, can be no longer contained in the mouth, but will be thrust out, distorted, and appear of an ugly livid colour, froth and spittle being at the same time discharged from the mouth.

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And as the blood vessels distributed through the encephalon may become distended from the same cause, the soft substance of the encephalon will be compressed; whence the sight, hearing, and touch, will be rendered dull, all the functions of the brain will be disturbed, and at length entirely abolished; but the snoring or rattling attends when the viscid froth begins to fill the whole mouth, fauces, or lungs; and the blood vessels of the lungs being distended at the same time, the cavities of its air vessels are diminished. Hence the unfortunate patient suffers all those disorders which happen to such as are strangled with an halter; only in this disorder they are much more unhappy, as they are obliged to suffer these bad effects by slow and gradual advances.

The best of all methods for curing an inflammation is that by resolution or dispersion; and therefore this course is to be pursued before any other, provided there is any reason to expect it will succeed;

ceed; but more especially this method is required in the cure of an inflammatory quincy, since a suppuration is attended with so much danger from the increased tumour compressing the organs of respiration and deglutition; and likewise because there is reason to fear, lest the abscess breaking, should discharge its matter into the windpipe, and suddenly suffocate the patient.

We may assert, and not without reason, that there is hardly any acute inflammatory disease more mutable: it is frequently seen in practice that the inflammation occupying the tonsil on one side, suddenly abates, and affects the tonsil on the other side. Nor is this all, but it likewise frequently removes to other and very distant parts of the body.

This kind of quincy ought to be well remarked, because I have seen some mistaken in supposing a suppuration already formed, and believing the white spots to be the apex to the abscess now ready to break, especially if they were not

called in at the beginning of the disease; or did not observe that the ulcers attended from the first: but the distinction of these is easy enough, since an abscess here formed swells much more, and never comes to maturity but when the disease is of longer standing.

A continual draining of a thin serum from the mouth is also one of the worst signs in an inflammatory quincy, for such a flux of serum may proceed from a compression of the larger veins, which are here seated to return the blood from the head to the heart.

We should always endeavour to disperse an inflammatory quincy by all the remedies in our power. But it sometimes happens that the violence of the disease, or the too late application of medicines, when the disorder has been neglected by the patient at the beginning, exclude all hopes of a future resolution: but the best method of terminating an inflammation which cannot be dispersed, is that by suppuration; and therefore in  
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this case all the endeavours of art are to be used to promote the suppuration as fast as possible, that the patient may be speedily relieved from the extreme difficulties with which he is oppressed.

It will be expedient for the patient to be continually holding in his mouth a warm gargle prepared from linseeds, mallows, marshmallows, and the like most emollient remedies. For thus the inflamed parts will be continually fomented, too great a dryness of them will be prevented, and the crude inflammatory matter will be happily changed or concocted into laudable pus. By the same means, likewise, the abscess seated in the fauces will be best disposed to break upwards, and discharge the collected matter into the cavity of the mouth, which is much the safest, since if the abscess breaks downwards towards the fauces, there may be danger, lest the matter should slip through the opening of the glottis, so as to threaten the patient with immediate suffocation.

We are sometimes obliged, in a suppurative quincy, to repeat bleeding, though

the symptoms denote that an abscess is now forming ; the reason is, because the swelling of the affected parts being increased at the time of suppuration, often excites a new and dangerous inflammation compressing the parts adjacent ; we are therefore obliged still further to exhaust the body, that the vessels may collapse, so as to prevent the suffocation, which is often to be feared in this disease.

When the disorder is seated in such parts as cannot be seen, we know that the inflammation is tending towards a gangrene, if the symptoms be most violent, the pains most acute, and joined with an intense fever ; and if these continue two or three days, without abating, and the patient is not in the mean time suffocated. But that a gangrene is already present, we know if the symptoms cease of a sudden, without any favourable signs ; as for instance, if the pain goes off, and the swallowing or breathing, before very difficult, now becomes free ; and yet there are no signs denoting that the mat-  
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ter, or the disease, is by a metastasis translated to some other part, which frequently happens. This diagnosis is confirmed by a cadaverous countenance, a coldness and livid colour in the extreme parts of the body, with a weak and unequal pulse, which are the signs usually attending a fatal gangrene in these parts.

This disorder seldom or ever admits of a cure; but a gangrene, which arises from a deposition of malignant humours upon these parts, without a previous inflammation, is indeed dangerous, yet frequently curable, provided effectual remedies are immediately applied. A convulsive angina, tho' it seldom occurs, yet has it sometimes been observed to happen.

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*Of a true Peripneumony.*

**A** Peripneumony is owing to an imperious blood, from an inflammatory spiffitude adhering in the narrow extremities of the arterial vessels of the lungs only.

The lungs are frequently and powerfully affected by the changes of the air, which, if moist, will weaken the fibres of the pulmonary vessels, so as that they cannot well resist the impelled fluids; and there will therefore be danger, lest the relaxed vessels admit grosser particles of the fluids than can pass through their extremities; and this more especially happens when heat is joined to a moisture of the air, and thus occasions an inflammation. But, on the other hand, if the air offends by too great a dryness, so as to deprive the internal surface of the windpipe and bronchia of its natural moisture, these parts being rendered less flexible, will be more difficultly expanded or dilated by the inspired air. Moreover, the ultimate small mouths of the exhaling vessels, which open in the surface of the air-vessels of the lungs, will be dried up so as to resist the impulse of the fluids, whence obstruction and inflammation may follow; and this more especially, as by a dry and hot air the

most fluid juices are dissipated from the body, whence a greater thickness or tenacity of the blood will arise from the same cause. But too great heat of the air will produce the same effects as the dryness of it; but if the heat of the air be joined with moisture, it may prove injurious by too much relaxing the pulmonary vessels.—Intense coldness of the air, is, above all causes, most apt to produce this disease, for by cold and frost the particles of the blood are con-creted together.

Straining, wrestling, &c. may occasion a peripneumony; for then almost all the voluntary muscles are in violent action; whence the motion of the venal blood is accelerated almost as much as in running. But moreover we see, that all those who wrestle or struggle with each other, or by great straining endeavour to raise weights or remove certain obstacles, breathe in a great quantity of air, which they retain a long time before it is expired; and this they continually repeat.

But the air retained in the warm lungs becomes rarefied, and presses so much the more powerfully upon the pulmonary vessels, as it is expanded by heat: thence it is evident that the pulmonary vessels must be less capacious, while at the same time the motion of the venal blood is accelerated towards the heart, into more violent and frequent contractions; but since the pulmonary vessels are then compressed or straitened by the rarified air, the blood will more difficultly pass thro' the lungs; and only the more fluid part of it will be able to flow through the lessened extremities of the vessels, while the thickest part will be accumulated, and occasion obstructions and inflammations.

Singing and bawling may also produce this disorder; for the voice is formed by an expulsion of the air contained in the whole capacity of the lungs, drove out by the powers contracting the thorax; yet so, that the air thus drove through the windpipe, strikes against the ventricles of the larynx, arytenoide cartilages, and  
rima

rima of the glottis. For when the rima of the glottis is too much dilated, the air passes out very freely, and produces no sound or voice, as is evident in those who endeavour to sound a deeper tone than they are able; but musicians have demonstrated that the difference of the voice, with respect to acuteness and gravity, depends upon the different aperture of the rima of the glottis, and the increased or diminished celerity with which the air is expelled. When, therefore, people endeavour to sing the most sharp tones, the causes contracting the thorax, expel with a great force the air contained in the lungs through a very narrow aperture of the glottis; whence the compressed air violently re-acts upon the cavity of the lungs, in which it is contained, so as to hinder the free passage of the blood through the lungs. The same is also true in bawling aloud, when the voice always forms a more sharp tone, the more violent it is. The appearances observable in those who sing or bawl

aloud, evidently prove the truth of this assertion; for in such the face always appears red and turgid, the eyes are suffused with blood, the veins of the forehead and neck swell, &c. all which evinces, that the venal blood is accumulated about the right side of the heart, because it cannot freely pass through the lungs.

Many causes concur in a peripneumony to render the inspired air very hot; for here the lungs are stuffed up with the thickest, or red part of the blood, which we know to be most disposed to produce heat, and to retain it a long time when produced; through the vessels of the lungs, not yet impervious, but lessened by the adjacent, obstructed, and distended vessels, the humours are very swiftly transmitted, whence a greater heat must arise; add to this, that the lungs distended with impervious blood cannot be sufficiently expanded, and therefore can take in but a small quantity of the cool air at such inspiration.

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From all these concurrent circumstances we may easily conceive the reason, why the expired air is perceived extremely hot in peripneumonick patients. A yellow spitting, intermixed with small particles of blood, is of the best import in this disease; for the thickness and yellow coloured note that a concoction of the morbid matter is already begun.

A peripneumony may be carried off by urine, but then it is necessary the discharge should be very copious, it will otherwise not suffice; but the discharge ought also to happen before the seventh day, since, if this disease continues longer without any salutary discharge, there can be no hopes of curing it without some other disease succeeding upon it. A white and uniform sediment in the urine denotes safety to the patient and shortness of the disease; so is a sediment at first red, and afterwards changing white by degrees, because it denotes a perfect concoction and change of the morbid matter.

We cannot expect a perfect cure of a peripneumony, unless the disease be  
slight,

flight, that is, the inflammation seated only in the bronchial artery, or in but a small part of the pulmonary artery.

HIPPOCRATES condemns a simple yellow spitting as dangerous, because all the obstructed vessels are not set at liberty, for if they were, some red bloody streaks would appear intermixed with it: he likewise pronounces a white, viscid, and uniform spitting to be useless, because it contains none of the morbid matter, but consists only of the inspissated mucus lubricating the bronchia, compacted into a roundish figure in the cells of the lungs.

Every suppuration is attended, more or less, with a fever: this fever generally increases towards evening, when the crude chyle formed from the aliments is moved through the vessels with the blood, and from the action of the lungs weakened in this disease, is not so soon assimilated or subdued, but retains its own crude nature for a long time, before it can acquire all the qualities of our animal



mal humours; and therefore it increases the fever, either by forming an obstruction, or by its stimulus, or by both together.—Even in healthy people the quickness of the pulse is increased towards the evening; and for that reason all diseases which are attended with an increased velocity of the circulation, grow worse towards evening. But since the vital powers are weakened or exhausted by the long continuance of the disease, and at the same time the course of the blood is impeded through the lungs, the reason, therefore, is sufficiently evident why the pulse is weak and soft.

Night-sweats almost constantly attend an abscess of the lungs, as they likewise attend upon those who have a consumption of the lungs, with a purulent spitting: for it appears from physiology, that the action of the lungs upon the blood serves, among other uses, to form a most exact mixture of all the humours, and to give the blood a due degree of  
density

density or firmness, as well as to work up the chyle to that perfection which is natural to our healthy humours. But the chyle is always lighter than the blood or its serum; and therefore the action of the lungs and arteries is to compact the chyle, and give it a greater solidity, that is, to reduce more of its matter into the same or a less space or dimensions. But when the action of the lungs is weakened by an abscess formed in them, the texture of the blood will be rendered less firm, and the mixture of all the parts of the blood with each other will be less intimate or exact. Therefore, when the whole surface of the external skin is thoroughly heated by the warmth of the bed, the thinnest parts of the blood from the increased motion of the humours, by the continual slight fever, will be expressed in the form of sweat, that when such a cacochymia takes place in our humours, as renders their parts less assimilated and unequally mixed, there then ensues a propensity to sweats from even slight causes.

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But all these effects will be still more increased, because the matter confined in the abscess of the lungs being attenuated and absorbed by the veins, will very much increase this cacochymia, and continually dispose the blood to be more inclining to a putrid dissolution. But this sweat will appear chiefly about the throat and forehead, because the pulmonary abscess impeding the free passage of the blood through the pulmonary artery, will, at the same time also, prevent the return of the venal blood from the parts above, whence all the vessels of those parts will be more distended, and consequently, *cæteris paribus*, the sweat will be more conspicuous, often gathering in drops when the patient is weak; and this is always of bad presage.

The urine is almost constantly observed to be frothy in this case; so that, upon shaking it, a froth often continues upon the surface for several hours, whereas healthy urine very soon loses the froth which has been raised by a violent shaking;

king; and therefore this urine is bad, because it deviates in its qualities from that in a healthy state. The urine of healthy people is always saponaceous, as the oil being mixed with the more acrid salts of the blood, is changed into a soap dissolvable in water: but at the same time all these are so highly attenuated in healthy urine, that it has no ropiness or viscosity capable of maintaining a lasting froth. But as in this disease there is an imperfect assimilation of the humours, and the most fluid and moveable parts of the blood are dissipated in sweats, it is no wonder that the urine thus degenerates, so as to resemble an unactive, viscid, and soapy lixivium; yet the same sort of urine is observed in other diseases of the lungs, as when, for example, that viscus is stuffed with a ropery viscid phlegm; we are not, therefore, from this symptom alone, to form our opinion of an abscess in the lungs: but if such urine appears at the same time with the signs before mentioned, it  
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confirms the diagnosis; but that great paleness, leanness, and weakness, must attend here, is evident enough from what we said before; for the blood being broken or dissolved, from the weakness of the assimilation, causes paleness; and the night sweats, hectic fever, and loss of appetite, are the causes of leanness and extreme weakness.

Although the matter contained in a vomica of the lungs should be absorbed by the veins, and be deposited by a metastasis on some other parts of the body, yet when this is done, the ulceration will continue in the lungs, whence new matter will, in a short time, be collected again in the same place; and therefore no great benefit can be expected from such a translation of the matter. But when the inflammatory matter, being subdued and rendered moveable, passes on into the veins before an abscess is formed, and mixing with the blood, is afterwards deposited upon other parts of the body, the lungs may by that means

means be freed from the disorder, and when once freed, they may enjoy the same state which they had in health.

When matter is moved with the blood through the branches of the descending aorta, a great part of it will be conveyed, both by the cœliac and mesenteric artery, through the chylopoietic viscera, and from thence passing into the vena portarum, it must make its way through the narrow vessels of the liver, in which organ we know the passage of the humours is proportionably always more difficult, as the venal blood must pass on through the narrow ends of converging vessels, without being assisted by the impelling force of the heart. It will therefore not appear wonderful if from hence an obstruction arises about these parts, and is followed with the signs of a slight inflammation. Now, whether this be the genuine cause of the symptom observed, or whether it be from some other less known cause, it is sufficient for the physician that he is assured this presages a  
future

future abscess about the legs; but they should be the signs of a slight inflammation only, and soon disappear again; for if they continue, there would be reason to fear the morbid matter would lodge itself in the liver, with more dangerous events. A vomica of the lungs may easily be distinguished from a scirrhous swelling of those parts, because the former daily increases in bulk till it breaks, whereas a scirrhous hardness of the lungs continues a long time in the same state.

It is demonstrated that the inspired air serves to cool the blood, which acquires a most intense heat by its rapid motion through the pulmonary artery; which refrigeration is so necessary, that an animal being deprived of it for a few minutes, dies, and presently falling into the most horrid putrefaction, exhales an intolerable vapour or smell. But violent inflammation is attended with a great heat; and the turgid inflamed vessels afford but little space for the inspired  
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air, whence we may expect the blood will be much less cooled. It is therefore evident, that in a violent inflammation of the lungs, all those causes concur, which are able to produce a sudden mortification and speedy putrefaction of the part.

The strongest man labouring under a peripneumony, immediately becomes so weak that he cannot lift up his hand, owing to an impeded influx and pressure of the nervous fluid into the muscles: now in a violent peripneumony almost all the blood is collected betwixt the right ventricle and the extremities of the pulmonary artery, while at the same time the free return of the venal blood from the brain is impeded, whence the encephalon is compressed: the left ventricle of the heart, in the mean time, receiving scarce any blood at all, will be unable to send a due quantity by the carotid and vertebral arteries to the encephalon; and therefore the most powerful causes of weakness will concur.

Revulsion, which is so necessary in the cure of an inflammation, is here impracticable;



practicable; for all the blood of the whole body must pass once through the lungs in the same time that it is moved through all the other parts of the body; consequently, the motion of the blood through the lungs cannot be much impeded or lessened by any art, if life be still remaining. All the fluids of the body flow to the heart and lungs, as to their original source, and thence supply every individual part again.

When the whole substance of the lungs is inflamed, the right auricle and ventricle of the heart will be filled, the course of the blood through the lungs being obstructed; whence the coronary veins will not be able to empty themselves, which will cause an inflammation in the very substance of the heart itself: and since the heart is suspended in the pericardium almost in an horizontal direction by its four large blood vessels, in such a manner as that the right auricle and ventricle of the heart

incline towards the fore part of the body, the reason appears evident, why the right auricle and ventricle being very much distended while the left are almost empty, the heart will be thrown forward, so as to touch the side of the thorax, which must necessarily terminate in death.

A bilious spitting is bad, if purulent, and it appears after the sixth day; for such a discharge seems to denote that the inflammation of the lungs, which attended in the beginning of the disease, is now changed into a suppuration; while at the same time there is a new inflammation exciting that bilious, or yellow spitting, which is not yet concocted or matured, whence the patient at that time labours under a double disorder. If a very little blood is intermixed with good and concocted spitting, it is esteemed one of the best signs; for then the obstructing matter escapes (per anastomofin) by a dilatation of the mouths of the arteries, which open in the trachea, where-

by the lungs are happily fet at liberty. But when the spitting is very bloody, there is reason to fear that the impetus of the vital humours from the adjacent heart is so very great, as to burst the very small and tender vessels of the lungs, and extravasate their blood.

A simple yellow spitting denotes that the grosser parts of the humours are accumulated in the lungs, while the thinner parts only pass through them, which is a most fatal circumstance. Thick and white spitting is nothing more than the mucus of the lungs collected in the bronchia, where it is thickened by heat and stagnation, so as to retain the round figure which it acquired in the cavity of the lungs, even after it is spit out; whence it appears, that by such a spitting there is none of the morbid matter discharged which oppresses the lungs, and therefore is a mortal sign.

Myrrh, frankincense, gum sarcocolla, opopanax, &c. made up into a bolus with turpentine, Peruvian balsam, &c.

are very proper taken several times in a day with smooth balsamic emollient decoctions; for by these mild and native balsams we deterge the ulcerated parts, and when they are cleansed, dispose them to consolidate and heal.

Riding on horseback is also of very great service, where the strength will admit of it; for by this means the fresh air, which every moment enters the lungs, sweeps away, or shakes off the matter from the ulcerated parts, and removes the load oppressing the lungs by those concussions of the body which arise from the motion of a horse, and this even without a cough, or at least with a very slight one.

It is observable in those who have a pulmonary consumption, and daily evacuate by spitting the matter collected in the lungs, that towards the evening, when their hectic fever is usually much increased, the spitting becomes suppressed, and the anxiety augmented; but in the morning the fever lessens, and the spit-  
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ting comes on again, to the great relief of the patient.

That violent passions of the mind have an effect on the lungs, is observable from the alteration which is thereby made in respiration.—A person seized with great anger, immediately breathes very strong and pants ; so a man suddenly struck with a panic, perceives a great oppression about the breast, fetches very troublesome sighs, &c.

If any disease, by its false appearance of mildness, deceives the less skilful, it is the *false peripneumony*, for here there is no intense heat, great fever, or other violent symptoms which usually attend a true peripneumony ; for the material cause of this disorder is a sluggish inactive phlegm, which begins slowly to be collected in the narrow extremities of the pulmonary arteries. But among those signs which inform us that a sluggish phlegm is moved together with the blood through the vessels, and is rendered less pervious, are reckoned a slight weariness

and greater weakness, together with an unusual dullness.

But when that sluggish phlegm begins to adhere to the vessels of the lungs, the free passage of the blood, from the right to the left side of the heart, is then impeded, when the patient endeavours to breathe with greater efforts to forward the course of the blood; and from thence there arises a panting, with complaints of a troublesome anxiety and oppression at the breast: but in the mean time there are no signs, or at least very slight ones, of any fever attending: then follow shiverings, not confined to any particular part, together with the attack of a slight fever, so that at one time the patient is hot, and at another time cold again. But by degrees the lungs are more and more stuffed up, attended with a disagreeable rattling; the shortness of breath increases, together with weakness, and death ensues. *Sydenham* is of opinion, that the absence of the fever, or the reason why it is scarce perceptible,

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is partly owing to circulation being interrupted by the obstruction of the lungs, and partly because the blood, charged with a great quantity of phlegmatic matter, cannot be rarefied or heated into an ebullition. Hence the reason is evident, why there are scarce any signs appear either from the urine or pulse, from which we may judge of the fatality of this disorder.

Redness of urine is esteemed a sign of internal heat, and yet in this distemper such urine may be easily discharged, if we consider that those are invaded with it chiefly who are short and fat; and when in these people the inactive oily glue is dissolved by motion, heat of the air, &c. and suddenly mixed with the blood, an imperviousness of the humours of the worst kind will be produced; and it is these oily parts which being mixed with the salts of the urine, which give that redness to it.

So soon as the shortness of the breath and oppression perceived about the breast  
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by the patient, denote that the lungs are stuffed up, a vein must be immediately opened, (and that from a large orifice, lest the phlegm with which it is charged might obstruct a smaller opening) for thus the mass of fluids to be moved through the lungs will be lessened, and, together with the blood drawn out, will be removed: part of the phlegmatic matter flowing with the blood through the veins, the febrile motion will be lessened, if any there is, from whence a greater impaction of the viscid phlegm into the narrow extremities of the pulmonary arteries might be apprehended, and the vessels being likewise unloaded, convenient room will be made for diluent and attenuating medicines. After bleeding a clyster should be immediately administered to cleanse the bowels, made up of honey, nitre, the yolk of an egg, and barley water; these clysters should be thrown up daily, till respiration becomes easy, and the strength of the pulse enlarged, and by that means we know the lungs to be relieved.

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The legs and feet may be fomented with warm baths; by which means they being relaxed, the panniculus adiposus may swell and receive into its cells a large quantity of the ropery phlegmatic matter, which may be thus drawn off from the lungs as much as possible.

Large blisters applied to the legs and thighs may be of great service also.

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*Of a Pleurisy.*

**A** Pleurisy is said to be present when a person labours under an acute continual fever, with a hard pulse and a sharp pricking inflammatory pain in the side, which greatly increases in the act of inspiration, but abates in expiration, or by holding in the breath; also becomes milder when the breathing is performed by the abdomen chiefly, without moving the breast; a cough likewise attends, which is almost incessant, and which exciting great pain, is therefore stifled or suppressed by the patient.

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An acute continual fever must accompany this pain; it cannot else be properly called a pleurisy.—Hysterical and hypochondriac persons have very sharp pains about them, but then they are not attended with a fever.—*Pain*, therefore, and *an acute continual fever* are the *pathognomonic* signs of a pleurisy; and this pain is *sharp and pricking*, arising from a distension of the inflamed vessels.

A hard pulse attends most of the more acute inflammatory diseases, from the more dense and compact blood passing more difficultly through the extremities of the capillary arteries: but this symptom may sometimes deceive us, when the patients cannot inspire for the severity of the pain, to avoid which they almost suffocate themselves; for then a peripneumony succeeds in consequence of the pleurisy, and the pulse feels small and soft.

But since, when the thorax is dilated by inspiration, the inflamed parts are more stretched, the pain will consequently be

be at that time increased; and for the same reason it will be slighter during expiration, and when the sick hold in their breath. Hence it is that those who have a violent pleurisy scarcely breathe, to avoid the severity of the pain, whence they almost suffocate themselves. Such patients, therefore, are often eased in their pain, while the thorax remains bound up with a roller, so as to allow little or no dilatation to the breast in respiration; for in that case inspiration is principally performed by the abdomen without moving the thorax: for in the act of inspiration the thorax is dilated, not only by the motion of the ribs, but likewise by that of the diaphragm, which being drawn downwards enlarges the capacity of the chest, while at the same time it lessens those of the abdomen; whereupon the abdominal viscera, being compressed, urges against the muscles of that venter, and thrusts out the belly. Therefore, while the thorax is thus immoveably bound up, there may be still a  
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sufficient space left for dilating the lungs by the inspired air, while the diaphragm is drawn downward; which now probably acts with a greater force than when the thorax is conjunctly dilated with it: thus we see the manner in which the breathing, absolutely necessary to life, may be still carried on. But the breathing will also suffer more or less impediment, according to the situation of the inflamed parts

A cough is almost a perpetual attendant on a pleurisy; and since expectoration is of the utmost importance in a peripneumony, and since a pleurisy itself frequently terminates that way, it behoves for that reason every skilful physician, in the beginning of this disease, ever to observe whether the cough be attended with a spitting, and of what kind it is; for a dry pleurisy is by all condemned as the most dangerous, troublesome to treat, and difficult to bring to a concoction or crisis; it either carrying off the patient with great rapidity, or continuing  
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for a considerable time ; and even a spitting intermixed with blood, in this case, is far better than where there is no expectoration at all.

There is a very near affinity betwixt a pleurisy and a peripneumony, and they often arise from the same cause ; both are attended with a cough, and a pleurisy is near as often relieved by a spitting from the lungs. A peripneumony often accompanies a severe pleurisy, or almost constantly succeeds it : physicians therefore of the best judgment in practice have always been of opinion, that the lungs are the seat of both these maladies.

HOFFMAN was of opinion, that a bastard, or false pleurisy, occupied the external parts of the breast only by its inflammation ; but that if it invaded the surface of the membranous substance of the lungs, like an erysipelas, it then constituted a true pleurisy ; and if it yet descended deeper into the substance or body of the lungs, it then became a peripneumony.—Certain we are, that the  
pleura

pleura alone is not solely or constantly the seat of a pleurisy: we have even found a phlegmon seated within the fat and intercostal muscles.

PETER SERVIUS, after opening three hundred persons who died of pleurifies at *Rome*, always found one lobe of the lungs, corrupted and distended with a putrid matter; but the pleura appeared not at all affected, or at most but slightly. Indeed, if we consider that a pleurisy and peripneumony are often conjoined, and that it is not from the pleurisy only that the patient dies, because the pleura and intercostal parts are inflamed, but oftener because the immense pain occasions the necessary motion of the thorax to be suppressed, whereby the course of the blood through the lungs being stopped, brings on a fatal peripneumony; it will evidently appear, why in bodies dying of a pleurisy, the disorder should rather be constantly found in the lungs, while the pleura appears but lightly disordered.—For it is observable, that SER-

VIUS does not deny the pleura to be affected, he only confines it to a small degree.—The proximate cause of death was by him, therefore, ascribed to the lungs, although the original distemper might have previously been seated in the pleura, or in the adjacent muscles and panniculus adiposus; however, we are confirmed by a great number of observations, that the pleura is truly affected in this distemper.

The true seat of this disorder is in the pleura, incumbent on the costal muscles, and contiguous to the fat.

It is an observation of the learned TRILLER, that the pleurisy which attacks the right side, is not so dangerous, stubborn, or inveterate, as when the left side is affected: it proves often fatal on the third or fourth day, especially in persons who are very hard drinkers.

An original pleurisy generally requires copious and repeated bleeding, the symptomatical, or that which happens in consequence

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sequence of other epidemical diseases, will not bear it so well, at least no repetition of it; and therefore the lancet should be sparingly ordered. Pleurifies are seldom more severe, or more suddenly fatal, than when they happen upon excessive and sudden drinking of cold liquors, when the body has been much heated; and the reason is pretty evident, for the blood of a healthy person, drawn from a vein into cold water, instantly concretes into threads of an almost solid consistence. Now when plenty of cold drink is swallowed down the œsophagus, which descends in its course very near the trunks of the intercostal arteries, it becomes filled or distended with it; the whole stomach, in like manner, being also charged with the cold drink, instantly imparts the unusual coldness thereof to the adjacent diaphragm, liver, spleen, &c. the trunk of the ascending cava, and the large right sinus of the heart, incumbent on the thin tendinous part of the diaphragm, are likewise affected,



affected, by disposing the blood there collected to a concretion, and impede its passage, which it ought to make through the lungs.

The breathing is greatly injured, because at the time of inspiration the ribs must, of necessity, be drawn from each other; and the inflamed parts be consequently stretched and extended, and so cause a great increase of the pain. Upon this account such miserable patients hardly breathe air sufficient to dilate the lungs; whereby the right ventricle of the heart becomes unable to empty itself so freely as it ought to do. The blood, therefore, returning from the head by the jugular veins, cannot now find any admittance into the right sinus and auricle, already full; the whence internal parts of the encephalon are compressed by the turgid vessels, and the patient will become dull, stupid, and less sensible of the pain; and while the lungs are gradually more and more overcharged with blood, they soon expire, suffocated;

focated ; and it must be remarked, that pleuritic patients perish in the height of the distemper, not from the inflammation of the pleura, nor of the parts incumbent on the ribs, but are suffocated by a repletion or oppilation of the lungs, for want of a free respiration.

It is to be observed, that when a pleurisy has continued three or four days, without having had any necessary assistance, it seldom or never is cured by an innocent or mild resolution ; for then the violence of the disease usually gives rise to other maladies which seat themselves in the body, and more especially in the lungs.

TRILLER has very justly observed, that pleuritic patients generally escape by the help of nature, even without venæsection, provided a copious flux of florid or purple blood from the nose, happens between the *first and the fifth day*.

*Urina subrubra in pleuriticis* (says HIPPOCRATES) *habens læve sedimentum, securam judicationem indicat.* “ A pale reddish

dish-coloured urine, with a light sediment, in pleurifies, denotes a sure and safe crisis." If such an urine flows plentifully, and generally deposits such a sediment, with relief of all the symptoms, we are then sure the morbid matter is discharging itself; and we have more especially hopes that the disease will terminate that way, if this happens in the beginning, before many of the humours become vitiated by a long continuance of the distemper; for if this kind of urine happens towards the close of the disease, it will scarce ever be removed by that discharge only.

When the pain invades the back, shoulder, or arm, and that of the pleuritic side evidently abates, it is a very happy sign; for those patients most generally recover. It is worth observing, that *these pains happen ofteneſt upon the sixth day of the disease*—This metastasis, however, does not appear to cure the disease, but is rather the forerunner of a salutary crisis.

LANCISIUS often observed, that pleuritic patients, before the fourth day, expectorated a bloody matter, which afterwards appeared white and concocted; and that they did not draw this up from the bottom of the breast, but that they pointed to the place under the sternum, where the *vena azygos* opens into the *cava*.

All expectoration in peripneumonies are bad, which do not relieve the pain; but such as do, are certainly the best of all.

A white, concreted, or pus-like expectoration has been often known to cure a pleurisy; and even in a woman advanced into the fifth month of her pregnancy, when this spitting came on plentifully on the second day of the pleurisy, the symptoms were all immediately relieved, so that the disease itself was cured by the fourth day; a vein was opened on the first day of the distemper, but it was not repeated again, there being no occasion for it: this is the more remarkable, because HIPPOCRATES absolutely pronounces

nounces a pleurisy fatal to women with child, and declares in general, that all acute cases are fatal to pregnant women.

Expectorations of a yellow colour, intermixed with blood, are salutary; *Mitissimæ enim pleuritides sunt in quibus sanguinolentum spuitur*, is an axiom of HIPPOCRATES. “Those are the mildest  
“ pleurisies in which the spitting is some-  
“ what bloody:” but here the physician must avoid the lancet; for otherwise he suppresses expectoration, and kills the patient.

In a violent pleurisy, although by a happy treatment the matter of the distemper may be dissolved, and rendered fluxile, it hardly ever once happens, that this matter can be again assimilated with the healthy juices, so as to circulate with them freely, and without prejudice to the vascular system, which this matter almost constantly stimulates to such a degree, as obliges them to throw the same off by one outlet or another, in a sensible discharge from the body. This cau-

tion is very necessary here, lest any one should fear to order bleeding in the beginning of a pleurisy, thinking it might hinder the said salutary endeavours of nature to expel that matter:

Neither should we neglect to open a vein, even while the menstrual flux is upon the patient, provided there be a great difficulty of breathing; nay, the good effects of it have been very apparent, even in child-bed women, seized with a pleurisy, notwithstanding the lochia; and this is confirmed by the observations of LA MOTTE, who has repeated bleeding in the arm in these cases, even where the flux has not been very small.

It sometimes happens, in a pleurisy, that the breast can by no means be dilated or moved, upon account of the violent pain, whence the lungs transmit but very little blood; for which reason the large veins are very full and turgid, but the aorta receiving only a little blood, does not press forward that which is contained in  
the

the veins with any great force; so that, upon opening a vein, there often issues out but a small quantity of blood: but as soon as the patient expands them by sighing, or shocks them by coughing, the blood issues forth with impetuosity. This was observed in a pleuritic woman by TULPIUS, who advises physicians, therefore, in such cases, to persuade the patients to cough; but as the pain is often so very severe, that the least dilatation of the breast throws them into convulsions, it is not an easy matter to persuade them to do it.—Under such circumstances, it will be expedient to give them a pinch of some sternutatory, or a spoonful of sour wine or hot vinegar, to drink by way of pretence as a cordial, whereby an involuntary cough may be excited, which may suddenly remove the pain, or greatly abate it at least.

We should be cautious to avoid fainting in bleeding, lest a peripneumony should follow; for while the heart ceases to move in a fainting, the blood in the  
right

right sinus, auricle, and ventricle, often stagnates for some minutes; and the blood being in this inflammatory malady greatly inclined to inspissate and concrete, it will, in some degree, enter before the patient can be recovered from his fainting fit; it may therefore adhere and become impervious to the smaller vessels of the lungs, through which it ought to have passed; and by that means be productive of a peripneumony, which would be of much more dangerous tendency than the pleurisy itself.

TRILLER gives us a history of a case, to prove how effectual bleeding may be, even when the patient is extremely weak, and all the symptoms are, notwithstanding, aggravated to a degree of violence. In a robust youth, very fond of hunting, under a most severe pleurisy, after two plentiful bleedings, the disease seemed to change for the better; but on the fifth day the symptoms returned with great violence; so that, in spite of clysters and vesicatories, the patient seemed to be in  
the



the most imminent danger. A large orifice was made in the veins of both feet, now grown so cold, that though they were fomented with warm water, not a drop of blood came; upon which water was continued to be poured upon them, so hot as to fetch off the cuticle, and then the veins bled plentifully enough; and so effectually, that the patient, almost half expiring, revived, and was most happily cured of this most dangerous disorder.

SYDENHAM bled his pleuritic patients, as soon as he was called to them, from the arm of the affected side; but when he afterwards repeated this venæsection, he makes no mention of the part from which the blood was taken. HILDANUS observes, that he seldom or never found the desired success from bleeding in the arm of the opposite side of the pleurisy. And TRILLER confirms this also, as to the first bleeding; for the second he rather prefers the foot of the same side; and then in the opposite foot, if there should be a necessity for a third or fourth bleed-

bleeding; but he very justly remarks, that the first bleeding should of all be the most copious.

In this case a solution of Venice soap, in equal parts of warm water and new milk, has been found a comfortable fomentation; or half an ounce of soap to a pint of the emollient decoction, in which flannels were dipped and laid upon the side, and hot tiles placed over them, in order to keep the fomentation from cooling too soon.—In the night-time, that the frequent renewal of the fomentations might not be troublesome, the side may be first rubbed with unguent. de althæa, and then be covered with a melilot plaister.

A simple decoction of barley, with oxymel and nitre, is often sufficient here, since this includes all the qualities necessary towards a cure; for it dilutes by being watery, relaxes and eases by the mealy substance of the barley that is intermixed with the water, while the honey and vinegar very well dissolve inflam-  
matory

matory size or spiffitude, as does the nitre likewise, which at the same time abates the too great heat of acute diseases by lessening the density of the humours.

We should by all means keep pleuritic patients from being too hot; they should have liberty to be taken out of bed for a few hours every day, if their strength will admit of it: copious bleeding, and other cooling medicines, will avail but little without this precaution, and more particularly if they happen to be overloaded with bed-cloaths.

In the paraphrenitis, the sardoniac, or convulsive laughter, is a pathognomonic sign.

Clysters in this disease are useful; for when they are thrown into the bowels, they may extend through the whole length of the colon, even to the end of the ilium; and as the colon, when it has reached as high as the liver and spleen, lies very near to the diaphragm, it will, therefore, when filled with an emollient clyster, have the effect of a  
mild

mild and discutient fomentation applied to the inflamed diaphragm. Great mischief may be feared from an abscess of the diaphragm draining into the cavity of the abdomen: for if it be considered that the diaphragm is always in motion, and that the circulation through its vascular fabric is very rapid on account of its vicinity to the heart, we may easily perceive that a large quantity of matter must gather there in a short time; and that the ulcer of the diaphragm will admit of no cure, more especially when it is constantly moistened by the confined matter, rendered acrid by long standing. It is true, indeed, the matter poured out will, by its own weight, drain to the bottom of the abdomen; but being long confined and corrupting there, its putrid vapours will infect all the viscera, and will itself corrode all the parts within its reach.

Great caution is necessary towards the close of a pleurisy with regard to the diet of the recovering patient, for too sudden a repletion would endanger a fatal relapse.

*Of*

*Of an Hepatitis, and of the several kinds  
of Jaundice.*

**T**HE arteries which branch to the liver are but small, in proportion to the size of so considerable a viscus, and the blood which is driven through the liver, from the trunk of the vena portarum, moves on but very slowly, as it does in the veins, having now no further assistance from the moving powers of the heart and arteries: on these accounts, probably, a true inflammation of the liver is not so frequent as in other parts; but very stubborn and chronick obstructions are therefore much oftener formed in this tender gland.

Since an inflammation can take place only in those vessels, through which the humours are conveyed with a directed motion from the basis, towards the apex of the cone of the vessel; 'tis therefore evident, this malady may be seated in the branches of the vena portarum, dispersed

perfed through the liver, as well as in the branches of the hepatic artery; for all the venal blood returning from the other viscera of the abdomen, flows together into the trunk of the vena portarum, and from that venal trunk it is again propelled throughout the liver, by converging branches of the said trunk; but anatomical injections have also taught us, that the branches of the hepatic artery, which convey blood for the nourishment of this viscus, are distributed throughout every part of the liver, as well as the arterial branches of the porta, which serve for the secretion of the bile; and that they run in company by the sides of the former, throughout all the substance of the liver; and even seem in many places to join, or open one into the other by anastomoses; for, in a dexterous injection of the vena portarum, I have known the wax return through the hepatic arteries; and therefore here, as well as in the lungs, a twofold inflammation may take place; but it is  
worth

worth remarking, that the effects of an inflammation in the liver, from a stuffing up of the portal branches, or of the extremities of the hepatic arteries, will be very different from the same effects in the lungs, from an inflammation of the extremities of the pulmonary or bronchial arteries of the lungs; for in the lungs, in both cases, the very considerable force of the heart, which is contiguous, presses upon the inflamed parts; but in the liver the branches from the porta are filled with blood from the veins of the abdominal viscera, moving on much more slowly than the arterial blood which passes the hepatic arteries. On this account the effects which arise from the blood pressing upon an inflamed part, and which are, likewise, the plain indications of a present inflammation, do not so plainly shew themselves when the malady lies in the branches of the vena portarum; and this seems to be the reason why some physicians are often mistaken in their diagnosis of this distemper.

GALEN, and many physicians after him, have particularly distinguished the distemper, according as what certain part, or region of the liver, the inflammation is seated in, as whether it be in the convex or gibbous part, which lies next the diaphragm, or in its concave or hollow part, which covers a portion of the stomach and duodenum; but he will have the diagnostic signs to differ in these two cases, more especially because different parts are pressed and irritated by the inflammatory swelling of the liver; so that if the inflammation be seated in the convex part of the liver, he observes there will be a greater difficulty of breathing, a pain of the right side will reach up to the very neck, and a cough will also attend: but if the concave part of the liver be inflamed, he then tells us, that a sickness, reaching, vomiting, and great thirst, will be most observable.

The omentum has no excretory vessel; and therefore all the fat, liquified and  
trans-



transfused by disease or violent exercise, must pass directly through the epiploic veins into the vena portarum; whereby the whole liver will be suddenly surcharged with an inundation of oily fat, which will not very readily move thro' the very straight passages of the small vessels, and will give rise to an obstruction of the worst kind, more especially in this inert viscus, which is first attacked by the said oily plethora.

Stony concretions are no where oftener found than in the liver and gall bladder, and in the passages destined for the separation, retention, and expulsion of the urine.

NEBELIUS, in the body of a soldier, found a long worm, both in the cystic and in the hepatic duct, with a number of the same sort in the intestines; whence he reasonably conjectured, that those worms had made their way from the duodenum, through the common biliary duct, into the cystic and

hepatic duct. There may, perhaps, be other passages by which worms may get into the liver; for RUYSCH, in examining the mesentery of a horse, found a part of the mesenteric artery greatly dilated, which, upon examination, was owing to numberless small worms about the size of very fine needles: neither is it absurd to believe that such vermiculi, when they were infinitely smaller, might have passed along from the mesenteric arteries to the veins of the same name, and so get, by that means, into the liver.

It is well known that the fore part of the liver, which lies upon the stomach, is in immediate contact with the peritonæum, and is therefore very easily affected by the external cold; and hence we may frequently account for inflammations of the liver, and very stubborn jaundices.

Violent thirst may occasion terrible disorders throughout the whole body, but more especially in the liver, because the blood in that viscus is obliged to flow from the  
veins,

veins, thro' the straightened arteries, without receiving any additional force from the heart and lungs.

If now the whole tract of the stomach and intestines, being overparched for want of drink, there be none of the usual moisture re-absorbed into the meseraical small veins, the venal blood of the abdominal viscera will return too thick, before it is driven by the vena portarum through the liver, in the extremities of whose minuter vessels, it will be, therefore, apt to stick and adhere; but the other venal blood, before it enters the right side of the heart, is first diluted, with all the lymph collected throughout the cellular substance of the whole body, and is then attenuated by passing the pulmonary artery with a very considerable muscular force from the heart: but as both these helps are wanting, towards facilitating the course of the blood thro' the liver, it readily appears, that we have much reason to fear obstructions in this gland, from the impervious blood

adhering closely to the impacted vessels.

When the bile cannot pass through the intestines, but returns from the liver into the blood, and overspreads the whole surface of the body, it occasions the jaundice.—But since the hepatic bile differs in colour from that of the cystic, and both of them often put on a different colour from that which is natural to them, it will necessarily follow, that icteritious people will be variously tinged: sometimes they are pallid, or of a yellowish green hue; at others of a deep green, inclining almost to black; yet physicians have generally distinguished but two kinds of the jaundice, namely, the black and the yellow; although there be, in fact, a great diversity, or number of colours, betwixt the slightest yellow jaundice, and that which descends almost to a black.

A doubt, however, may arise, Whether an inflammation of the liver can produce a jaundice? Unerring observation proves that every

every impediment which obstructs the free discharge of the bile from the liver and gall bladder into the duodenum, may produce a jaundice. Thus, for example, a jaundice has often been observed in new-born infants, from the glutinous clogging humours collected in, and sticking to the sides of the intestines; but that kind of jaundice is easily cured by expelling the congested humours by a slight purge. Some women have been observed to have a jaundice during the time of their pregnancy, although they were not troubled with that distemper either before or after their child-bearing; this might possibly happen by the enlargement of the womb compressing the abdominal viscera, and displacing the intestines, after a wonderful manner, from their usual situations; they have sometimes voided most hard fæces, of a very considerable bulk, by stool, for some days after delivery; after which the yellow icteritious colour has entirely disappeared: whence it is very probable to suppose the colour to have been

distended by such accumulated fæces in that part, where it lies under the liver, so as to compress the cystic duct. If, therefore, an inflammatory tumour of the liver happen in a place, so as to compress the exit of the cystic bile, no doubt such an hepatitis, or inflammation of the liver, may produce a jaundice. But it is not quite so clear that every hepatitis may be the cause of a jaundice; namely, inasmuch as it impedes the secretion of the bile, by the stuffed-up extremities of the vena portarum; or if the adjacent secretory ducts are compressed by the same distended and inflamed vessels that lie contiguous to the ducts, which contain the bile, already separated from the blood of the vena portarum. Certain we are, that the cystic bile differs, both in colour and taste, from the hepatic; and there are numberless arteries ramified throughout the gall bladder with wonderful contrivance, and in very peculiar distributions, as we are taught by anatomical injections: whence it seems not improbable, that  
they

they may be some way serviceable towards the preparation and secretion of this bitter fluid. Add to this, that naturally in the liver we observe, neither bitterness nor a yellow colour; and therefore, when a jaundice tinges the surface of the body with such a colour, it seems to follow, that it must be from an obstruction of the excretion of the cystic bile into the duodenum, whence it is driven back again into the blood. This opinion is confirmed by observations made in deceased bodies; abscesses, even of a considerable bulk, have been found in the liver, without any preceding jaundice; and other tumours have been found, likewise, which, by their bulk, must have compressed a great many of the adjacent biliary ducts and vessels: on the other hand, when the bodies of those deceased of a jaundice have been opened, the causes have manifestly appeared, and been found such as obstructed the discharge of the cystic bile into the duodenum; and,

and, among these, the most frequent causes have been stony concretions blocking up the excretory passages of the bile.

But, in the mean time, it deserves to be remarked, that the blood of the vena portarum contains in itself the matter for the immediate formation of the bile, which must be soon after separated from thence by the secretory ducts of the liver; so that, if a large part of the final extremities of the vena portarum are stuffed with impervious humours, the secretion of the hepatic bile will be necessarily obstructed; and that as yet unperfected bilious juice, which was about to assume the name of bile, will remain mixed with the blood, and pass with it throughout the body: consequently, this must induce a bilious cacochymia of the blood, which thus retains a humour accumulated in itself, that ought not naturally to be there, or at least not in that abundance. When continual, or remitting fevers, have been  
epide-



epidemical in the autumn season, after very hot and dry summers, practical observations have then shewn us, that the liver has been often affected, and stuffed with a thick blood, that has had almost an atrabiliary tenacity: now in such patients there has not, indeed, been observed the intense yellowness of a jaundice, but the face looks of a fallow complexion, exhibiting a paleness, mixed with a small tincture of light yellow, as a symptom of this distemper.

So long as the febrile heat continues moderate, and is treated with resolvent medicines, the obstructions formed in the liver may be removed, so as to restore the patient to perfect health; but if, when the distemper is going off, the tired patient refuses farther help, or if the physician carelessly neglects to treat the remains of the distemper timely, chronic disorders are then usually the consequence, which prove extremely difficult to cure, particularly scirrhus indurations of the liver. In autumnal epidemical fevers,

fevers, which follow after the hottest summers, it often happens that a slight inflammation of the liver is an attendant with other symptoms; and when such a fever is removed or extinguished; before the febrile viscid that lodged within the obstructed vessels of the liver be thoroughly resolved, the surviving patient often lives in an unhealthy, or languishing state, with a pale, yellowish, or fallow countenance, and is not without the utmost difficulty recoverable to sound health; at least, it will be a work infinitely more laborious, or difficult, to remove obstructions in the liver that are once confirmed and inveterate, when they might have been easily removed in the beginning of the distemper. But this difficulty here principally arises, because the blood of the vena portarum, now become venal, moves with a less force, wanting, in a great measure, the impulse of the heart and arteries to push the blood forward through the other parts.

parts. Hence HIPPOCRATES, who describes an hepatitis, but by a different appellation, very justly remarks, that many who have had this distemper only palliated, or imperfectly cured, have afterwards had a return of the same malady; and that then they are in great danger of a consumption: and he afterwards adds, that for forty-five days after the violence of the distemper is over, the patient ought to be kept to the lightest regimen, and make milk whey his daily drink, provided the season of the year will permit; because the disease is stubborn, and requires a careful treatment. When no further yellowness is observable in the eyes, while the pale, yellow, or fallow colour goes off from the face, and the urine, with the intestinal fæces, recover their natural appearance, while at the same time no pain or anxiety is felt about the right hypochondrium, especially after a full stomach, or after more than usual exercise of the  
body,

body, we may then pronounce the cure to be compleat; and more especially, when for several weeks after there are no returns of these symptoms or complaints: for great care is here necessary, not to leave any remains of the distemper within the liver, since most chronical distempers take their rise from an inflammation of that viscus, either neglected or ill cured.

The principal diagnostic signs, by which a tumour of the gall bladder may be distinguished from an abscess of the liver, are, that a throbbing pain attends suppuration, together with wandering shiverings, which are both frequent and hold for some time; that the tumour of an abscess has not so uniform or circumscribed a figure; nor is there at first such an apparent or easy fluctuation observable in it, which is most sensibly to be perceived in the center of the tumour only, the circumference still remaining hard. But it is obvious enough, that the difficulty  
of

of distinguishing these tumours, is only when they occupy that region of the liver wherein the gall bladder is placed.

The bad symptoms which attend the liver, wasting by a purulent imposthume, proceed partly from the re-sorbed matter bringing on a purulent cacochymia of the blood; and partly because the functions which depend upon a healthy state of this important viscus are interrupted: for the quantity of collected matter increases daily, whence it has been found amounting in the liver to an incredible quantity: and thus, by drawing and compressing the adjacent organs, that lie contiguous to the liver, it may be productive of many evils. *ARETÆUS*, for this reason, among the other symptoms which attend a suppuration of the liver, mentions a sharp pain extending as high as the throat and top of the shoulder, because the diaphragm with the pleura connected to it, are hereby much distracted.

AN.

An inflammation of the liver is often attended with great anguish and oppression; and as all the functions of the several viscera in the abdomen must either be impeded or much disturbed, the free course of the blood through the portal veins of the liver, being obstructed, a great weakness of the vital powers from the corrupted bile that in this case often lodges itself about the præcordia or stomach, will happen; which has led some unskilful people to treat such an inflammatory hepatitis as a malignant fever, with great danger to the patient; but a diligent observation of the causes of an hepatitis, and of its effects, will not easily lead the wary physician into such mistakes.

The bile is known to be one of the sharpest and most putrescent juices of the body; the blood of the venæ portarum contains the immediate matter of this soapy fluid; but the property of the bile is to melt or dissolve the texture of the  
blood,

texture, insomuch that after a long continued jaundice, the blood too much fused by the intermixed bile, commonly terminates in an incurable and fatal dropsy.

Whatever juices flow through the vena portarum, do it by a two-fold passage, either through the secretory canals into the hepatic pores and ducts, or else through the final extremities of the vena portarum into the branches of the vena cava, which are distributed through the whole substance of the liver, and thence into the cava, sinus venosus, and right auricle of the heart. But since the hepatic bile, secreted from the blood of the vena portarum, is a fluid much thinner than the blood itself, it will therefore evidently follow, that if its course through the bilious canals be obstructed, that the said bilious juice will return with the blood through the vena cava, so as to infect the whole mass of circulating fluids with a bilious cacochymia. 'Tis true, indeed, these bilious canals, that convey away the bile as it drains or secretes from the blood of the vena portarum, are not very easily

obstructed, but from a violent cause, since the fluid has a motion through them, from a less to a more largely opening part of the vessel; but then it meets with a much smaller passage through the entrance of the common duct into the duodenum, where obstructions often prevent its exclusion. Again, the bile, and even the blood, containing the immediate matter which constitutes the bile, are very much inclined to run into calculous concretions, which being once formed, and daily enlarged, may easily block up those passages. Finally, all sorts of tumours seated in the liver, whether they be inflammatory, suppurative, scirrhus, steatomatous, &c. may produce such an obstruction by compressing the adjacent parts which lie contiguous.

Young people are seldom attacked with this disorder, which oftener invades people more advanced in years, or those inclining to old age, and more especially persons who have long laboured under afflictions and grief, or are of a fretful and choleric  
hasty



hasty disposition ; but above all, it attacks those who lead very sedentary lives, who live sumptuously, feed high, and who, after having filled their stomachs, indulge themselves at table, where, by sitting too long, all the abdominal viscera become compressed. They first begin to complain of a troublesome tightness about the præcordia, with a sensation like that of an oppressing load ; for some hours after eating they complain of a sharp heart-burn, or pain about the cardia, which has been known to hold the patient several months before a periodical jaundice of this kind. The next observable symptom is a slight yellowness in the greater canthi of the eyes, the urine becomes somewhat higher coloured, and bilious excrements pass by stool ; afterwards a sudden and unaccountable anxiety arises, without any apparent previous cause, with an intolerable pain about the cardia, and sometimes even throughout the whole abdomen ; whence it is often

taken for a pain of the cholic or iliac passion; and lastly, a fever succeeds, with violent vomiting, and when these symptoms have continued for some hours, they abate or go off, and leave the whole body tinged with this icteritious colour. In some the face and breast only have been coloured with this yellow tint at the first attack, without affecting any of the other parts of the body, but then the urine is of a very deep yellow, and the patient has no other material complaint; yet some have a troublesome pain in their back, loins, and sides, before the yellowness appears: HIPPOCRATES has taken notice of this, *Quibus lumborum ac lateris dolor sine manifesta causa, icterici fiunt.* “Those who have a pain of the  
“ loins and sides, without a manifest  
“ cause, become icterical.” After twenty-four hours, sooner or later, these patients find themselves seemingly well, and perceiving no more of this oppressive weight about the præcordia, flatter themselves they shall soon get perfectly well;  
their

their urine becomes less and less coloured, the yellowness goes off daily, so that in a few days there seems to be nothing of the distemper left. In some there is an intolerable itching in the skin, all the time it is tinged with the bile.—But in a few weeks, and sometimes a few months, the whole train of these complaints return again in the same order; and after the patient has been attacked thus for several times, the jaundice at length becomes perpetual, worse at some times than others, though not attended with such violent symptoms as at their first attack; the yellow colour is now very intense, and diffused all over the body, even the saliva itself, (this, however, is rarely observed) has a bitter taste; in process of time the whole body becomes of an almost black colour, the legs and ancles begin to swell, and the abdomen at length filling with water, sinks the miserable patient under a dropsy.

A jaundice happening in acute fevers, before the seventh day, is always suspi-

cious, because it rather denotes an increase of the malady, and that the vessels of the liver, which have hitherto remained pervious, are now beginning to be stuffed up and obstructed by the yet unconcocted matter.

Bleeding is, in general, proper in the cure of an inflammation for three reasons, namely, 1st. To prevent any further injury of the vessels which are inflamed, by lessening the quantity and impetus of the blood in the obstructed vessels: 2d. That the vessels, distended with impervious matter, may be restored to their proper vibrations, by lessening the fluid that oppresses their muscular and elastic force: or, lastly, That the obstructing matters having a less impulse of fluids urging from behind, may be repelled into a larger part of the vessel, and the obstruction be thereby removed. Now, it readily appears, that all these effects of blood-letting will be much less efficacious towards the cure of an inflammation of the liver, since the  
blood

blood of the portal veins is already venal, before it is driven into the narrow passages of the converging branches, whence it follows, that the impressed force of the heart and arteries on this blood must be extremely weak; but when an inflammation is seated in the final extremities of the hepatic artery, bleeding will then have a more considerable effect, no less here than in any other part of the body. We are not, therefore, totally to discourage bleeding in this case; for it may reduce the too great violence of the fever, diminish the heat, relax and empty the vessels, and allow a more easy entrance or admission of diluents and attenuants.

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*Of an Inflammation of the Stomach and Intestines.*

**I**T is almost a pathognomic sign of an inflammation of the cardia, when the pain is violently exasperated, after any  
Y 4 thing,

thing, tho' ever so small in quantity, has been taken down into the stomach, which it at other times would have easily borne. Indeed, if the inflammation be seated in the parts contiguous to the stomach, it will be irritated by its distension, but then the sudden exasperation of pain will not be so immediately perceived if but a small quantity be swallowed down. It is observable that an inflammation of the stomach often kills the patient very suddenly, by exciting the most violent convulsions.

If a scirrhus of these parts be recent, a course of Venice soap, used for a considerable time, has been found serviceable, provided the patient takes to the amount of two drachms every day for several months; for this is the highest resolvent, and is at the same time tolerably mild; but it should be laid aside immediately, in case the pains or vomitings increase upon taking it; for we then have reason to suspect the scirrhus is degenerated into the nature of a cancer, which will not  
admit

admit of this medicine; and here the medicinal spaw waters, which have no acrimony, and abound with an extraordinary power to resolve concretions or indurations in the human body, will be very properly prescribed.

Distempers of the spleen are very frequently mentioned by the ancients, but with such circumstances as afford good reasons to suspect they have sometimes mistaken the distempers of other parts, for this; for the left flexure of the colon lies immediately contiguous and under the spleen, from whence indurated fæces and flatulencies obstructed by these fæces, may cause pains and swellings in the region of the spleen, though there may be no fault in the spleen itself.—Moreover, if we consider that the ancients often mention scirrhoties of the spleen very speedily cured, and that even some of the moderns do the same, there will be little room to doubt, but that those hard swellings arose from indurated fæces, lodged at  
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the flexure of the colon ; since a scirrhus cannot be so suddenly resolved, but for the most part even stubbornly withstands the most powerful medicines.

The smaller intestines are oftener inflamed than the larger. The frequent cause of inflammation in the bowels, is the acrimony of such humours as are lodged in the cavity of the intestines ; and such an acrimony must be derived either from what is swallowed into the stomach, or from a matter formed in other viscera, and thence translated into the bowels. It will, perhaps, seem difficult to understand how the contents of the large intestines can be able to pass into the small intestine ileum ; and likewise to account how they should get over the place where the volvulus is seated ; but if it be considered, that by this inverted peristaltic motion, the ileum itself is emptied, while the cæcum is greatly pressed and its sides distended, such a passage will easily seem possible ; for if the volvulus be formed by an intorsus-  
ception



ception of a lower portion of the gut into the upper, the way will not be so wholly intercepted for any thing to pass upward by the reverted motion. But if the gut be in this manner involuted downwards, so that the lower portion being more dilated takes in the upper, such a return will, in that case, be certainly much more difficult; but then we are also to observe, that this stercoraceous vomiting only happens (at least for the most part) when the patient is in the last extremity of the disease, namely, when a gangrene is already formed, or very near at hand: and, it is well known, that, whatever tension the parts may suffer under a state of painful inflammation, they, notwithstanding, relax and subside when the phlegmon turns to a gangrene.

If the seat of inflammation be in the larger guts, the most emollient fomentations may be applied immediately to the inflamed parts, where they will relax the stuffed-up vessels, and dilute  
what

what is impervious ; but where the small guts are inflamed, it is true, that clysters cannot naturally penetrate so far as to reach the part itself, yet the large intestines being filled with such liquors, will prove as a warm bath to all the adjacent parts, and by that means be of great use ; and nothing is of greater service in relieving cramped or convulsed parts, as the application of warm and emollient remedies.

A prudent use of opiates may be of great relief, since we know not a more powerful antispasmodick than opium, but bleeding and the use of clysters must be premised, to abate the inflammation ; otherwise, while the pain is rendered insensible by opiates, the causes of the pain, to wit, the inflammation, may yet remain, and destroy the affected parts by gangrene.

If an acid acrimony excites this distemper, absorbents will be proper ; but, on the contrary, if it arises from any putrid matter, such things as are acid, or  
acescent,

acescent, will afford the best relief, more especially when plentifully diluted with water. In other cases, where the nature of the acrimony is doubtful or unknown, or where the excoriated membranes can only bear the softest liquors, watery, oily, mucilaginous, and emollient decoctions, will be always the best adapted.

Inflammations of the bowels must most certainly be treated in the antiphlogistic method by venæsection, fomentations, and emollient clysters.

If a fixed pain continues very severe in one certain place, with a violent fever and stubborn constipation of the bowels, while every thing taken into the body is returned by vomiting, or if the cure was neglected in the beginning of the disease, or no relief obtained from it, we may conclude that such a phlegmon of the bowels inclines to a gangrene.

A cadaverous countenance, livid lips, of a leaden colour, coldness of the extremities with anxiety, an inflated belly,

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an extreme weak and quick pulse, are certain signs of immediate death.

BAGLIVI observes, *Gravi iliaco si superveniat alvi fluxus, paucis post horis morietur nam sphacelata sunt omnia, hinc lethalis fluxus. Et si iliaco tumor ventris veniat, & flatus copiosi pedendo exeant, brevi morietur.* “ If a flux of the bowels comes upon a violent iliac passion, the patient will die in a few hours after ; for all the parts of the intestine are then mortified, from whence proceeds the fatal flux. And when a tight distention and tumour of the belly attends an iliac passion, with a plentiful eruption of flatus downward, the case is also desperate and fatal.”

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### Of Aphthæ.

**P**HYSIOLOGY demonstrates that a great quantity of the juices are discharged through the whole internal surface of the mouth, in order to be mixed with the aliments at our meals in mastication ;  
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and at the same time that there are numberless mucous cryptæ, or cells in the back of the tongue, tonsils, velum of the palate, pharynx and gula, which excrete a thick mucus for the lubrication of these parts. If we look into the mouth of a healthy person, we behold all those parts equally moist and tumid: whence we may justly conclude, that there are like emissaries every where which transmit the same mucous liquid this; is also perfectly confirmed by anatomical injections. Now those eruptive aphthæ arise when the said mucous humour, being rendered thicker than ordinary, cannot be driven forward through the ultimate extremities of the said emissary ducts, but adheres there, and blocks up the excretory openings into the mouth: while the force of the humour, urging from behind, distends the ends of the vessels above the surface, and thus produces the aphthæ. A diligent inspection of the aphthæ, at their first appearance, when they are here  
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and there singly dispersed, seems to confirm this opinion; for when they occupy these parts in thick clusters, they are not easily distinguished to be composed of single ones. But this appears still more evidently when the aphthous crust falls off, and is again renewed, as is frequently observed to happen: for then by wiping or scraping the internal parts of the mouth, there appears small white specks, more especially if they are viewed through a magnifying glass; these again suddenly encreasing, unite, as they lie contiguous, and within a few hours form a like aphthous crust, resembling that which separated and fell off a little before. Hence it is evident that *aphthæ* cannot, without an impropriety, be termed exulcerations.

This distemper is very rarely, or seldom ever observed in hot countries: for human bodies being more thin and lax in the warmer climates, become better disposed to perspire and sweat, so as frequently to carry off the matter of this and  
other

other distempers by exhalation or sweat, which, in bodies less apt to sweat, and in colder climates, does not so easily escape from the habit: and KETELAER affirms, that he has observed such copious sweats and urines to have rendered the aphthæ more safe and mild, whereas every thing that tended to lessen these evacuations always proved detrimental. It may, perhaps, deserve to be remarked, that in those countries where the aphthæ do not appear, that the white and red miliary eruptions are frequently to be observed on the outward surface of the skin. It may be then asked, Whether a like humour is not here deposited upon the outward skin, as that which in the case of aphthæ is dispersed through the surface of the various parts of the first passages? Certain we are, that these miliary eruptions often attend in most kinds of acute distempers and continual fevers, and there is also a very peculiar and disagreeable smell, commonly resembling that of flat or vapid vinegar,

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perceivable in the apartment where the patient lies; and this smell is also frequently to be observed in apthous patients. The white miliary eruptions exhibit very small pustules filled with a pellucid liquor, in part projecting above the surface of the cuticle; and after the said liquid is become turbid and opaque, they dry up, scale off, and are often renewed. Now in the apthæ many like circumstances happen, and are also preceded by anxiety about the præcordia, weakness, slight and perpetual dozing of unequal intervals, in the same manner as we often observe it to happen before miliary eruptions, and the decline of them after their eruption. Sometimes the miliary eruptions disappear very suddenly, with great danger to the patient: we likewise observe the apthæ to vanish within a few hours; upon which the fever returns, or rages with great violence, and a troublesome oppression is felt at the præcordia, from whence there seldom can be expected any relief but by  
throw-



throwing out the aphthæ again, if possible.—But these particulars are only proposed as merely speculative, that those who have frequent opportunities of seeing both the aphthæ and the miliary eruptions, may judge concerning the affinity of these two separations of the morbid matter, deposited upon the different parts of the body; for it must be confessed, that there are several other symptoms which precede and accompany the miliary eruption, which are yet not to be observed in the aphthæ.

A stupor and heaviness are certain signs of approaching aphthæ, which seldom or ever fail; so that even the nurse or attendants on the sick, where these eruptions have often been known, immediately presage their appearance when they observe these symptoms.

Hickups too have been often observed to precede a thrush in the mouth, which seems to be owing to the apthous crust, which is forming about the upper orifice of the stomach, where it is the cause of irritation by its bulk.

If we consider that the opening of the common duct of the bile and pancreatic juice into the duodenum, may be so obstructed by a thick aphthous crust, as to transmit neither of those important fluids, we may easily apprehend what great anxieties must follow about the præcordia. But when the said impeding crust is once separated, and a free passage opened for the discharge of the now accumulated bile, rendered more acrid by stagnating, we need not wonder if the worst severe gripes arise in the bowels, that are, in a manner, almost excoriated, so as to produce most dangerous diarrhæas and dysenteries: hence it is that many physicians have so much condemned the use of purgatives in the aphthæ, because they have observed them sometimes fatal within a few hours, by causing an over-purging, or hypercatharsis, which seems to have been in consequence, not only of the purgatives, but also of the sudden torrent of collected bile and pancreatic juice, rushing suddenly forth into the  
bowels;

bowels, and irritating their raw or excoriated surface. Moreover, as a salivation often holds for several days after the thrush is fallen from the mouth, before the dilated vessels can recover their former size; so, upon the same account, the juices which naturally distil into the stomach and intestines, frequently continue to flow in such great abundance, as to entirely exhaust the body by the purgings.

*Aphthæ* of the mouth in pregnant women may cause abortion, because they hinder the due preparation of the aliments, and absorption of the chyle; and, therefore, as the pregnant mother requires nourishment to sustain two bodies at the same time, the want of chyle will be soon destructive to the fœtus, more especially as it must have suffered considerably already, from the mother's humours being vitiated by the preceding distemper, changed much from the healthy state they ought naturally to have.

A hickup in the beginning of a thrush is of worse consequence than at their

falling off, because it denotes the interior surface of the stomach to be lined with very thick apthæ, which, gradually ascending from thence into the gula, at length fill the whole extent of the fauces, and are of the worst disposition, and become commonly fatal.

Cold applications in this disorder are very dangerous.

*Of a Nephritis.*

**A** Nephritis is an inflammation of the kidneys with intense pain.

Little urine, thin and aqueous, is justly condemned as bad, both as a sign in the distemper present, and as a cause in the future changes. As a symptom, because it denotes a very violent degree of inflammation, and that throughout the whole substance of the kidney; and it is so, likewise, as a cause, inasmuch as all the acrid parts of the humours are now retained, which, by the laws of nature,

nature, ought to have been this way evacuated from the body, and instead of which, the thin parts of the blood, driven through the kidneys, being thus exhausted from the other parts, increases the inflammatory density of the blood.

It may be occasioned by violent straining; for as the kidneys are fastened to some of the strongest muscles of the back, at that time swelled with action, while the diaphragm and abdominal muscles, at the same time, powerfully compress the viscera; and if we consider, also, the bigness of the emulgent vessels, it will, from all these matters considered, appear evidently, what a force the kidneys sustain in a violent exertion of one's utmost strength; more especially when the body, being bent forward, endeavours to raise itself upright with some large weight, in which case the muscles of the back act with a prodigious force. Violent straining, therefore, of the body, may be a

cause productive of an inflammation of the kidneys, by compressing and obstructing the final extremities of their arteries, and likewise by urging the gross red blood into the urinary tubes, which naturally transmit only pellucid juices that are much thinner.

It may be occasioned by heat; for by heated air the most fluid part of our humours are dissipated, and the blood becoming more dense, is also of a redder colour and more acrid, which brings on a strangury.

An iliac passion, and that of a fatal tendency, has followed upon symptoms which have indicated the disease in the bladder or kidneys. This has been confirmed by HIPPOCRATES, *Quibus ex stranguria volvulus succedit, intra septem dies intereunt, nisi oborta febre copiosa urina effluat.* “A strangury succeeded by an  
 “ iliac passion, is fatal about the seventh  
 “ day, unless a fever comes on with a copious discharge of urine.” GALEN seems to have a doubt about this; but I  
 have

have once met with it, though it must be confessed that the case is very rare and uncommon.

In an inflammatory nephritis, such urine as appears thick, although it does not subside, or form a distinct and even hypostasis, is, nevertheless, good, which yet, in other diseases, is a sign to be suspected. But the reason of this difference is, that in other acute distempers, the matter of the disease being dissolved and rendered fluxile, must remix with the blood, pass the lungs, and circulate with the blood through the arteries before it can escape through the kidneys; nor can it all pass out presently by this emunctory, but is obliged to suffer the repeated actions of the lungs and arteries, which, in a manner, divide, and, as it were, levigate its parts, that are thus adapted to form a copious and even sediment in the urine. But the matter of the distemper lodged in the kidneys has no such necessity of remixing with the blood, but may immediately, upon its colliquation or dissolution, descend and escape with the urine.

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The sharper diuretics are here mischievous; for by their stimulus they increase the fever and present inflammation, and give a greater acrimony to the urine, by which all the painful parts are more irritated, and the symptoms aggravated. Lenients with watery drinks, emollient and soft oily medicines are best, for they ease pain, relax the parts that are drawn into a cramp or constriction, and lubricate the passages to the bladder.

Pus discharged with the urine, if considered alone, is no absolute sign of an abscess or ulcer in the kidney; since it may come from the ureters or bladder, affected in the same manner. TRALLIAN has very well observed the signs by which one may distinguish, whether the pus comes from the kidneys or from other parts: for if the matter was not collected in the urinary passages, but being first absorbed elsewhere, passes off with the urine, this pus will appear most intimately mixed with the urine, and will subside, but very slowly to the bottom  
of



of the vessel; because this pus being intermixed with the blood, has been highly attenuated by the action of the lungs and arteries, and has passed thence with the secreted urine through the venal ducts. But when matter distils immediately from an ulcer of the kidneys, it is never thus intimately blended with the urine; but, soon after it is discharged, appears at the bottom of the vessel, separated from the urine.—Matter from the bladder is much more tenacious and glutinous, and directly subsides like slime to the bottom of the urinal; but matter from the kidneys appears more loose and fluctuating.

It seems a doubtful point, whether a complete palsy may ensue in the leg and thigh of the same side, from a tumour in the kidneys.—Since the large nervous trunks that are sent to those limbs, go out from the foramina of the *os sacrum*, and are so situated, as scarcely to be compressed by any swelling of the kidneys, however large it may be. Add to this, that in an abscess of the bladder there is

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discharged with the urine a sort of scabby or foliaceous fragments, which TRALLIAN calls *μορια πεταλωδη*, a leaf-like abrasion, which is, probably, a separation of the interior lining of the bladder; but from a suppuration in the kidneys, particles more consistent and fleshy are discharged in the urine, which are, by HIPPOCRATES, called *σαρκια σμίκρα*, *small carnucles*, and he tells us they come from the kidneys: but these are, probably, half gangrenous parts, from the substance of the kidneys themselves; for in the same manner we see that upon the breaking of abscesses in the external parts of the body, there are membranous fleeces of the cellular substance intermixed with the discharged matter.

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*Of an Apoplexy.*

THE longer the neck is, the greater is the distance of the heart from the basis of the skull; but as the mo-

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tion communicated to the blood, by the contraction of the heart, and dilatations of the arteries, occasioned by the blood which is propelled through them, are stronger near the heart than in parts more remote from it; it is thence very plain, that the nearer the heart is situated to the head, the blood will, *cæteris paribus*, be pushed with the greater force through the vessels of the brain; whence, likewise, these vessels will be the more distended, especially as the blood is sent to the head in a straight course through pretty large arteries. Hence it is remarked in physiology, that the carotid and vertebral arteries, when they approach the basis of the brain, are disposed in such a manner, as that the force of the blood which is propelled through them, may be diminished, lest the soft substance of the brain should be hurt by its violence: whence it appears why a short neck is justly reckoned a predisponent cause of an apoplexy.

In persons who are very corpulent, all the vessels of the body are compressed  
by

by the accumulated fat ; and there is no fat observed within the skull, or at least very rarely, and a very small quantity about the sinusses of the dura mater ; it appears very plain, that thereby the larger vessels of the brain must be filled and dilated, and the smaller ones compressed, whereby its functions will be gradually more and more obstructed ; hence they begin to grow dull, torpid, forgetful, and sleepy ; all the senses are rendered less acute in them ; and at last the brain being oppressed with too great a fullness, or a rupture of the vessels, they die apoplectic.

Plethoric persons become sleepy, torpid, and subject to swimings of the head, and unless that plenitude of blood be diminished, either by natural or artificial evacuations, they will be in danger of becoming apoplectic ; and the reason seems to be this, the red blood, naturally, is not found in the vessels of the brain, but in those of the pia mater, and in all its processes, which insinuate them-

themselves every where between the cortex and medullary substance of the brain; as, therefore, all the blood vessels in plethoric persons are turgid with too much blood, these vessels, likewise, will be distended, but the cavity of the skull is very exactly filled up by the contained brain, and the bones of the cranium cannot yield in adults; wherefore the blood vessels being more full than usual, the other vessels which contain the thinner fluids must be straightened and compressed, and therefore the functions of the brain disturbed.

The too great thickness of the humours may be reduced to three species, viz. *to polyposè concretions, an inflammatory spissitude, and a phlegmatic lentor.*

The immediate cause is the same in all apoplexies, but the remote ones are frequently very different; whence there can be no universal method of curing this disease: for if the animal functions are abolished by an inert phlegmatic  
lentor

lensor of the blood, whereby it is rendered unfit to circulate freely through the vessels of the brain, and serve for the secretion of the spirits, then that method of cure alone is proper which attenuates this lensor, gives a due consistence to the blood, and quickens its too languid motion; but if the blood, from an inflammatory spissitude, is obstructed near the extremities of the vessels, then a quite opposite method of cure, whereby the blood may be dissolved, and the too great motion of humours moderated, will undoubtedly be necessary.

A flux may be of service in an apoplexy two ways, either as it evacuates part of the morbifick matter, or as it diverts the force and quantity of the humours from the head downwards; for as by the humours being evacuated by stool, the vessels of the abdominal viscera are emptied, and thus make less resistance to the blood, which is sent thither; hence a powerful revulsion is made from the upper parts of the body. In the  
vertigo

vertigo the whole common sensory is affected; but then especially a vertigo threatens an apoplexy, when the cause of the former is lodged within the cranium, and then the vertigo is called idiopathic. This is known from the constitution of the patient, and other concomitant symptoms; there is likewise a sympathetic vertigo, in which the common sensory is indeed affected, but the cause of the vertigo remains without the cranium; as for example, bile corrupted in the stomach, poisons swallowed down, &c. but this species of vertigo rarely ends in an apoplexy.

Evacuations are then only useful in diseases, when they either remove the morbid matter, diminish the too great quantity of good blood in plethoric persons, check the too great rapidity of the circulation, or lastly, divert the force of the circulating humours from the parts affected, to other parts of the body; it easily appears that there cannot much good be expected from bleeding in apoplexies arising from a phlegmatic tumour.

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There is need of great judgment in the cure of a cacochymia, where the symptoms shew the functions of the brain to be disturbed: for if you suddenly disturb the humours before they are sufficiently attenuated, they will stick so much the more obstinately in the extremities of the vessels, and all the complaints will be increased. This is the reason why determining remedies ought first to be applied, that the pressure may be diverted from the head as much as possible, and at the same time a part of the viscid phlegm may be removed by evacuants; then we must begin with gentle dissolvents, and especially with those which powerfully resolve, and at the same time do not increase the force of the circulation suddenly and violently; such as Venice soap, tartarized tartar, regenerated tartar, fixed alkaline salts, of the ashes of plants, &c. After these have been some time used, if the symptoms become easier, we may know the lentor to be attenuated; then more acrid



dissolvents, and such as increase the motion of the humours may be safely used, together with corroborants which correct the too great laxity of the solids, a constant attendant of this kind of cacochymia. Blisters are here of the greatest service, not only as by stimulating and irritating the part to which they are applied they make a revulsion towards other parts of the body, but likewise by separating the cuticle from the skin, they draw a great collection of lymph under the epidermis, which, upon the blisters being cut, continues frequently to discharge several days; at the same time they increase the motion of the blood, through the whole body, dissolve and attenuate the lentor of the fluids.

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*Of Chronical Diseases.*

**C**HRONICAL diseases in strong labouring people generally arise from complaints remaining after acute distempers,

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which have not been perfectly cured ; but in weak and indolent persons, they are owing to a morbid quality of the fluids, gradually arising from the aliments not being duly assimilated.

Austere substances act first, and most efficaciously upon the stomach and intestines, and by constringing the mouth of the absorbent veins, seem to preclude their passage into the vessels, so that they cannot easily infect the blood ; now from this effect alone great mischief may be produced, since by that means the minute vessels of the internal coat of the stomach and intestines are so contracted, as that the arteries cannot discharge, nor the veins absorb the fluids as usual, and the whole chylication will be thereby disturbed : but when those austere substances are much diluted, either by drink, or by the fluids which are conveyed to the intestines, they then enter the lacteal vessels, and occasion the worst kind of obstructions in the glands of the mesentery ; or they may likewise be carried off  
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from the mesenteric veins by the vena portarum to the liver, and there produce the like bad effects; hence chronical distempers of the abdominal viscera usually arise.

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*Of the Palsy.*

**A** Palsy is a lax immobility of a muscle; it differs from the tetanos, in which all the parts are rigid and immoveable, and is caused by an obstruction of the course of the nervous fluid from the brain to the affected muscles; and also by a suppression of whatever ought to be evacuated.

As the organs which secrete and excrete the saliva, receive their blood from branches of the external carotid artery, it is plain, that the excretion of the saliva being hindered, the branches of the internal carotid vessels must be more filled, and at the same time the blood which is to flow through the vessels of

the brain will not be freed of that viscid mucous matter, which is separated by the salivary ducts: wherefore all the functions of the brain might be disturbed, and a palsy be likewise produced from this cause only. This is the reason why we fear deliria, and a phrenitis coming on in acute diseases, where the patient's mouth is very dry.

The cause obstructing the function of a nerve, may either be seated in the coats only, or likewise in the substance of the nerve properly so called; whence a different prognosis will arise, because the cause of the palsy frequently, when seated in the teguments of the nerves, may be removed by art, but when it occupies the substance of the nerve itself, it is seldom or never cured.

The higher the palsy is seated in the body, the more dangerous, in general, it must be, as the cause of the disease is seated nearer to the brain.

A paraplegia has often happened, without any apparent cause existing with-  
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in the cranium; but there, perhaps, was never an instance of an hemiplegia where the brain was not immediately affected, for the patient almost always stammers, loses his memory, &c. hence we have, likewise, reason to apprehend, that the cause of the hemiplegia increasing may bring on an apoplexy. But when a paraplegia or hemiplegia succeed upon an apoplexy, there is more hope, because we then have reason to believe that the cause of the disease is lessened, and that some parts of the brain are relieved from the obstruction.

It is a very bad symptom when the paralytic parts waste, for that denotes an insufficiency of nutritious liquor, which ought to supply the part affected.

A convulsive trembling of the paralytic part is good, both as a cause, and as a symptom; for it denotes, that the cause of muscular motion is again applied to the paralytic muscles, but not yet with such constancy, as that its effect can be durable, without soon giving

way a little. Whence it indicates a beginning cure, and gives great hopes of its being compleated; especially if attended with a gentle convulsion: for all the muscles which have been long at rest, if they happen to be hastily moved, are convulsed, as we see in those who are awakened out of sleep by a great noise, or the like, acting suddenly and powerfully upon the common sensory and nerves. But that convulsive trembling is of service, likewise, as a cause, seeing by those concussions, whatever remains obstructed in the muscles themselves, the extremities of the arteries, and perhaps in the very nerves, or at least in their coats, may frequently be resolved. Sometimes there is likewise felt a pricking sensation in the affected part, which is also a good omen: thus we frequently see, when a person sits sleeping inclined upon one hip, and compresses the great nervous trunk running along the back part of the thigh, with almost the whole weight of the body, the leg becomes numbed  
and

and immoveable; but upon changing the situation of the body, and so removing the compression, in a little time the disagreeable sensation is felt, as if innumerable small needles were pricking the part; soon after which the sense of motion and feeling returns: wherefore all those symptoms observed in a paralytic part, portend that a free motion is begun in the nerves through the arteries to the muscles; and that, therefore, there are great hopes of a perfect cure.

There are no hopes, or at least not very great, of curing a palsy, which has been of several years standing, because there is just cause to fear, that either the structure of the nerves is destroyed, or that their sides are so grown together, as no longer to transmit the animal spirits.

*Of an Epilepsy.*

**I**F all the senses, both internal and external, are quite abolished, and at the same time the muscles are convulsed, independant of the influence of the will, it is a true epilepsy. Thus it is distinguished from a palsy, in which there is a flaccid immobility of the muscles; and likewise from a catalepsy, in which all the senses are indeed destroyed, but the body retains the same posture which it had at the first attack of the disease; and from an apoplexy, because in this, together with the cessation of the senses and voluntary motions, there is the appearance of a profound and constant sleep without convulsions. It is true, indeed, that apoplectic persons are sometimes convulsed a little before death, but in that case the epilepsy succeeds the apoplexy. The diagnostic signs, therefore, of an epilepsy, may be reduced to, 1. a cessation of the senses, 2. to a perturbation of the voluntary motions,

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*Of an Epilepsy.*

In the worst species of all, they fall down immediately without any warning symptom, and experience teaches us, that this is almost always incurable. More frequently they at first feel a swimming in the head, perceive sparks before their eyes, and a purple or black colour or variegated like the rainbow; sometimes they hear strange kinds of sounds; others are sensible of a disagreeable smell, or a bad taste in the mouth. I have seen some who observed a small spark appear before their eyes, which was suddenly increased till it grew to the size of a large sun-beam. Others have imagined they saw all objects, as if they were involved in a cloud; and this darkness suddenly increasing, they fell down: *ARETÆUS* has remarked this, calling it *φκινς φαντασις*, the appearance of a cloud. Some feel, as it were, a cold blast ascend from the finger or toe, or from some other part of the body, which, as soon as it arrives at the heart, they instantly fall: the patients recollect all those

*Of an Epilepsy.*

those sensations as soon as they recover the paroxysm, but are ignorant of every thing that happens during the fit; whence afterwards, when they have suffered several paroxysms, they can foresee the fit a coming with those previous signs, and take care of themselves as much as they are able, or beg the assistance of the bye-standers. Most part of them the moment they fall, give a loud shriek, which they are, however, not conscious of: then follow, for the most part, various surprising convulsions of the muscular parts of the body. The respiration is most surprisingly disturbed; and this symptom seems to have made the ancients believe, that the epilepsy was nothing else than an effort of the brain to disburthen itself of something malignant, or an oppressing phlegm: but the respiration being hindered, the blood cannot be transmitted freely through the lungs, and therefore the right ventricle of the heart cannot evacuate itself; whence the venal blood is accumulated  
near

near that ventricle, and all the conspicuous veins appear very turgid, especially those of the forehead, the raninæ under the tongue, and the jugulars in the neck: then the face begins to grow livid, nay, almost black, first under the eyes about the lower eye-lid, where the skin is very lax, and likewise about the lips, almost in the same manner as in those who are strangled.

Young persons are more obnoxious to this disease than those who are grown up; for in the former, both the greater bulk and more tender structure of the brain, seem to constitute the predisponent causes, which, by means of any slight accidental cause supervening, produces the epilepsy.

Fear and sudden frights have, perhaps, occasioned this disorder more frequently than any other cause, and rendered it often incurable, nay and sometimes suddenly fatal.

I have several times seen a viscid foam tinged with blood, voided from the  
mouth

mouth and nose in the time of the paroxysm ; and yet afterwards I could not observe the least appearance of a hurt in the tongue or other parts within the mouth, though I examined with the greatest care. If now the vena cava, passing through the liver, happens to be very full, and cannot empty itself into the right ventricle, then the vena portarum will not be able to transmit to it the blood remaining after the secretion of the bile ; while in the mean time the convulsed abdominal muscles and diaphragm propel the venal blood towards the liver with such force ; hence the mouths of the vessels opening into the cavity of the intestines, may be easily dilated so as to transfuse the blood itself, without any rupture of these vessels : in like manner also, the liver being thus distended, the blood returning from the spleen, by the *vasa brevia*, as they are called, may make its way into the cavity of the stomach ; hence may be known the reason why blood may be sometimes voided

voided upwards and downwards during the paroxysm, and even after it is over.

All the secretions and excretions may be much disturbed during the paroxysm of an epilepsy.

An epilepsy, when it takes its origin from the *hands or feet*, is easily cured, if from the *side* it is more difficult, but if from the *head* it is very bad and dangerous.

The only hope in attempting to cure this malady, consists in endeavouring to bring about a great change in the body. Removing the patients into a different air and climate.—It is often observed to go off at the time of puberty.

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*Of Melancholy, and of a Mania.*

THE madness of melancholics differs from the febrile delirium or a phrenzy, in that it appears without a fever, and continues, moreover, with obstinacy for many months, or even years;

years ; whereas a delirium, with a fever, terminates much sooner, either in health or death. It differs from a mania, as it is not attended with those furious out-rages which are observable in maniacs.

In the highest melancholy we see the face looks contracted and pale, while a great anxiety is felt about the præcordia, as if the chest were forcibly compressed: and there frequently ensues a kind of diabetes, or large discharge of a most clear and limpid urine. The pulse is at this time small, weak, slow, and rare; the blood, therefore, here deprived of its more fluid parts, continues moving on with a weakened force through the cramped or contracted vessels, from whence an easy occasion is given for the grosser parts of the blood to run together into cohesions; at the same time the oppression about the heart, which accompanies extreme grief, and occasions a most troublesome sense of sickness about the stomach, denotes that a free course of blood is hindered thro' the portal veins; and in consequence

quence of this the said gross dregs of the blood will very quickly adhere to the vessels of the abdominal viscera, and will consequently not only produce atrabiliary or melancholic humours, but hysterical and hypochondriacal complaints likewise. Add to this, moreover, that severe grief engages the mind too intensely upon one and the same object, and prevents sleep: whence we may very easily account for the atrabiliary and melancholic humours within the body.

Fevers, such as are the most difficult of cure, are known to follow after the most sultry and hot summers, in the autumn season, and which at their beginning appear continual, but afterwards put on the type of intermittents; in these we observe a great anxiety about the præcordia, and if the inspissated bile be not discharged from the body, the patients will languish often during the whole winter: and then in the spring following the said atrabiliary matter will

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become

become fused by proper solvents, and come away from the body by stools like so much melted tar.

Dense and lean bodies are more liable to these disorders, because the more subtle fluids are more forcibly expelled and dissipated by the greater strength of their vessels, while they still retain those that are more gross or clammy.

A warm and moist air is proper in these cases; for here the most liquid and moveable parts of the blood are dissipated, the remains grow thicker, the smaller vessels exhausted collapse or shrink up, and the whole body becomes drier; the solids are all rendered more rigid or inflexible, and the fluids yield with more difficulty to the given impulse; and thus brings on a strict and dry temperature of the whole body. But an air which is warm and moist will, therefore, weaken this too great strength of the solids, while at the same time it applies a watery and thin vehicle to the thickened fluids; for it is plain, that when the bi-



bulous veins, which open throughout the surface of the body, are relaxed by warmth and moisture, they will absorb the watery vapours in the contiguous or ambient air. And this is the reason why the spring season is the most favourable for curing this and most other chronical distempers, because it comes joined with such a temperature of the air.

Summer fruits, if they be perfectly ripe, are of great service in these complaints: these fruits abound at a season of the year when people are the most heated by the scorching rays of the summer sun, disposing the blood to an atrabiliary spiffitude and acrimony, and then these fruits continue till the autumn, that by the revolving power of these, the melancholic matter may be attenuated, which was collected during the precedent summer, and be by their gentle laxative force carried out from the bowels. I have even known melancholy mad persons, in the most raving degrees of the

distemper, cured by feeding wholly upon summer fruits, such as cherries, strawberries, &c. taken to the amount of three or four pounds in a day, while they have obstinately refused all other food and medicine, from a suspicion of being poisoned.

Although atrabiliary humours may occupy divers parts of the body, they, however, above all, most frequently settle and fix within the abdominal viscera. It is demonstrated that the most moveable parts of the blood, driven by the heart into the aorta, recede thence with a greater velocity, and in a more direct course, while the more viscid and less moveable parts go on slowly and laterally; and therefore, agreeable to the laws of *hydraulics* these last will be carried more abundantly into the descending aorta, from which spring the cæliac and two mesenteric arteries which supply the abdominal viscera. Since, therefore, in the present malady, many of the more subtile and moveable parts of  
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the blood are exhausted from the habit, while the more viscid and less fluxile cohere closer together; therefore many of the grosser parts of these last will fall into the said visceral arteries; and if we then consider, that all this blood of the abdominal viscera is obliged to be rendered, in a manner, twice arterial, before it can return to the heart, which obliges the course of the humours to be extremely slow; it will appear very evident, why the atrabiliary humour is the most frequently of all deposited upon the abdominal viscera, although it was before equally distributed through all the circulating juices. It is well known what influence a strong respiration has towards quickening the circulation through the abdominal viscera; because, when the diaphragm and muscles of the abdomen then act, all the contents of the belly are compressed, and by that the motion or return of the venal blood is promoted. Since, therefore, melancholic persons

intent upon one and the same object, generally neglect all motion for a sedentary and still life, or even sometimes too closely apply to their studies, with their body inclined forward, the free course of the humours will in them be still more impeded thro' the abdominal viscera, and this in a more eminent degree when they continue long sitting in that posture after they have made too plentiful a meal. For this reason it can never be sufficiently inculcated to the literati, who are so frequently subject to this disorder, that they accustom themselves to sitting with their body upright, and not lean with their belly to the table at which they are seated: since the secretion of the bile, no less than that of the other humours, prepared by the viscera of the abdomen, results from a course of healthy juices through the vessels, which in this case is hindered by the degeneracy of the juices to an atrabiliary cacochymia; it  
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thence easily appears, that all the alimentary secretions must in this case be disturbed, and that the secreted juices themselves, must be altered from their natural or healthy conditions. But it appears from the whole history of chylickation, that to subdue or change the crude nourishments, there is required a due quantity and quality of the bile, and clear juices which flow from the stomach, pancreas, and bowels themselves, &c. And therefore from this defect, the first digestion will be greatly injured, and the nourishments will be changed, rather spontaneously, in the natural course of their corruption, than assimilated into our own juices, while they stagnate in so warm a place, into which the common air has a free admittance. Thus the aliments rather will degenerate into various kinds of acrimony, according to the diversity of their nature; from whence new mischiefs will again arise; hence flatulencies, with cramps of the stomach and bowels: moreover, as the

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secretion of the bile is deficient, the bowels are less stimulated to unload themselves by stools; and as the bowels are less furnished with that lubricating mucus which drains into them, of a due quality and consistence, from numerous follicles, or cells in their membranes; therefore the excrements are longer retained in the large intestines, become dry, and are with much difficulty excluded.

The curative indication in the present case calls out for the discharge of the atrabiliary matter from the viscera in which it is arrested, lest by long standing there it should become more thickened and cohesive, so as to concrete with the vessels themselves in which it is lodged, and produce incurable obstructions and indurations. And as the perverse maldy grows still worse by delay, it appears to demand the most effectual remedies, without loss of time: “Because when the disease is become  
“ inveterate, and, in a manner, habi-  
“ tual or natural, it is next to incurable.”

*Inve-*

*Inveteratus enim (says TRALLIAN) & veluti in naturam conversus, morbus incurabilis propemodum evadit* Great prudence, however, is required in this work, since the tough atrabiliary matter yields neither easily nor presently to the operation of mild remedies; and yet by those which are more violent, it is often roused and provoked to do dreadful mischief. Certainly, if the atrabiliary suburra be duly liquified by resolvent medicines, and a suitable regimen, so as to flow from the bowels by a spontaneous purging or flux, it gives the greatest relief to the present distemper; and therefore in that case, purgatives are convenient; but if, without this liquification of the matter, purgatives draw off the thinner juices from a melancholic body, they are always bad.

Since, therefore, a total expulsion of the atrabiliary matter can hardly be attempted without danger, unless it be first rendered fluid and moveable enough to yield to the most lenient purgatives; this

must be therefore the intention first pursued. But even in this again, some prudence is required; for we know all the abdominal viscera send their venal blood to the liver, and, therefore, if the matter be too precipitately resolved in them, so as to pass their arterial extremities into the portal veins, the said viscid matter will be thrown upon the liver: but since there is sometimes a great acrimony joined with this atrabiliary matter, which produces no great mischief while it lies wrapped up in the said tar-like viscid; yet if the acrimony be set at liberty, and be roused into action, so as to rush with violence at once upon the liver through the portal veins, it may thus entirely destroy, or at least greatly injure this tender viscus; for these reasons the dissolution of the matter of this distemper is not to be urged too hastily, and ought always to be attempted by such medicines, as, without acrimony, have a powerful resolving quality.

Now there are a variety of salts, and those even of an opposite nature, that may be  
be



be employed in making medicinal soaps, and we should chuse out such of them as have an acrimony opposite to that we know prevails in the atrabiliary viscid. If, for example, the symptoms indicate a rough sourness, it will be proper to use a course of the Venice soap, made of an expressed vegetable oil, and a lixivial or alkaline salt; but if, on the contrary, a putrid cadaverous acrimony, or an oily rancidity appears to prevail in the blood, by the proper signs in those circumstances, the ascendent saponacea will be of the greatest use; such as honey, simple oxymel, juices of tart summer fruits, and the officinal jellies or syrups prepared from them, which yet would rather increase the first case, or acid acrimony, as they are all of them spontaneously ascendent, or easily inclined to turn sour.

Exercise, provided it be not too violent, is very proper in these disorders; for otherwise, by over-heating the body, the most liquid juices are dissipated, and the quantity of atrabiliary matter increased,

creased, and rendered more turgid, which would be attended with great danger: intense heat is for that reason to be avoided.

They frequently discharge a thin saliva; and this more especially happens when the free circulation is impeded through the viscera of the abdomen, stuffed up with a viscid atrabiliary humour, and consequently there is an obstruction to the secretion of the intestinal lymph, pancreatic, and gastric juice: now as the salival glands separate the same kind of humour from the blood, therefore during the obstruction of the former, there will be a greater separation of saliva, by which the mouth will be continually moistened by a frequent thin spitting. Melancholic persons are for this reason distinguished by the appellation of *spitters*: but such frequent spitting is bad, both as a cause or a sign, since it denotes the vessels of the abdominal viscera to be stuffed up, while there is a great quantity of the more liquid and  
fluxile

fluxile parts exhausted from the blood by the profuse and thin spitting, which must aggravate the distemper.

It is always of the last importance towards the cure of diseases, to give due attention to such discharges as naturally arise from diseases with some apparent relief.

A filthy eruption of scabs, or a leprosy, has often succeeded upon these cases, attended with great advantage: and the reason is this, the matter of the atrabilis is not only offensive by its thickness and tar-like tenacity, but likewise on account of the great acrimony which attends this tenacity also, and which, indeed, does no great harm, so long as it lies intangled in the said tenacity; but when from any cause the atrabilis is become fused, and put into motion, it may then easily mix with the circulating juices, and if it be urged with some force upon any particular part of the body, the very worst and most incurable maladies may follow: but if the  
atrabilis

atrabilis be gradually fused, its acrimony will be likewise gradually extricated, and being diluted with the lymph of the body, may pass therewith to the emunctories of the skin; and irritating the small vessels by an acrid stimulus, it will be unable to escape by insensible perspiration, but adhere to some of the smallest cutaneous vessels, which it will slowly corrode, so as to produce all these evils. A dropsy is good that succeeds upon a mania: now to understand the reason of this, it is to be observed, that this distemper arises sometimes from a too dissolved state of the humours, which therefore drain from their larger vessels, into the cavities or cells of the body, and are collected in the adipose or cellular membrane. Now such a colliquation of the humours coming upon a maniacal person will also resolve or melt the atrabiliary viscid, so that it may either escape from the body, or else be deposited upon parts less important, with a relief to the distemper; so likewise will a  
saliva-

salivation frequently cure this disease. If a mania be occasioned by the atrabilis, we may hope, that when the matter is evacuated, the patient will be cured; but when the common sensory is so altered by any violent passion of the mind as to bring on a mania, it is sufficiently evident, as we cannot learn what produces this change within the common sensory, that we cannot judge what remedies will remove it.

Opiates, after previous evacuations, may be of service, and especially when attended with stubborn watching; and it is remarkable that maniacal patients will bear great quantities of it.

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*Of Canine Madness.*

**T**HE properties of the canine virus is as wonderful as it is difficult to be accounted for.

In general hydrophobous patients are seldom delirious, and though they seem  
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to look angry and threatening, are clamorous, and incline to bite those about them, yet do they chiefly remain sensible to the very last; nay, admonish the bystanders to take care of themselves, whenever they find a fit coming on, which is known by a greater redness of the face, a fixedness or immobility of the eyes, and distortions in the muscles of the countenance. This very miserable state does not, however, hold long; but the pulse now begins to flag and grow instable, the breathing becomes very difficult, and a cold clammy sweat appears upon the whole surface of the body, and they expire convulsed. The hydrophobia seldom runs beyond the fourth day, computing from its first appearance.—It has been universally observed, on opening the bodies of those who have died hydrophobous, that a considerable quantity of bilious matter has been found in the stomach, or that the gall-bladder has been distended with a thick and black bile, and that the pericardium was quite

quite dry; and it is well known that the internal surface of the pericardium, as well as that of the heart and its auricles, with the large venal and arterial trunks near the heart, all included by the pericardium, are continually moistened by a very thin vapour, that distils from the exhaling vessels of these parts, so as to hinder the heart from growing to the pericardium, and to preserve at the same time the necessary flexibility in all those parts. Now since this exhaling vapour is some of the thinnest and most fluid portion of the blood, it must of course be diminished, nay, sometimes be entirely deficient, when all the finer parts of the humours have been exhausted in sweats and continual agitations, without any fresh supplies of drink.

The lungs are stuffed up with congested blood, because all the blood returning in the veins from the whole body, must first have a passage through the lungs; before it can be again distributed throughout the body by the branches of

the aorta. Now after the several secretions have been performed, while the blood flows through the arteries, a great deal of its most fluid parts will fly off, and leave the venal blood much thicker and less moveable: but in healthy persons, all that is absorbed into the bibulous mouths of the inhaling vessels which open through the whole extent of the stomach, intestines, outward skin, and other membranes, passes directly into the veins, and becomes mixed with the venal blood before it is driven thro' the lungs; and thus the venal blood is kept sufficiently diluted and fluxile to pass through the final extremities of the pulmonary arteries. But in this disease before us, all recruit from diluent liquors to the blood is intercepted; and of course the said cohesive fluid must, in a little time, begin to be arrested in, or at least gain a very difficult passage through the said arterial extremities in the lungs; whence arises that intolerable anxiety and difficulty of breathing. Sometimes  
a total



a total dissolution of the humours will happen, and then the blood will never be arrested or accumulated in the lungs, but easily passes on to the left ventricle of the heart, for which reason the venal system will very readily empty its contents into the arterial. Now, since at the same time the blood, however dissolved, cannot be urged through the final extremities of the distended arteries, unless a considerable impulsive force be impressed on it by the arterial coats, and by the heart, therefore in defect of this force, the blood will be congested in the arteries; because whenever there is such a mischievous dissolution of the texture of the humours, all physicians observe the pulse to be very quick, weak, soft, and intermitting; which is a plain sign that the vital powers are oppressed, which move the humours through the vessels: but the blood will be less arrested within the branches of the pulmonary artery, because the whole force of the right ventricle drives the blood thro' the pulmonary artery and tho' the said force becomes weaker,

yet the more frequent and laborious breathings in this malady keep open this passage of the circulation, which is much shorter than the other, wherein the blood is driven by the force of the heart thro' the extreme branches of the aorta, thro' all the parts of the body, even to the skin; and for this reason it is usual, in these cafes, for the extremities to be cold or chilly, while a great heat is perceivable about the præcordia.

The feat of this malady is principally about the stomach, gula, and parts adjoining; this is confirmed by the very symptoms, great anxiety and oppreffion felt about the præcordia, inflation of the stomach, when any kind of liquid is offered, bilious, brown vomiting, of a disagreeable smell: they are frequently delivered by vomits.

*Of the Scurvy.*

**H**ÆMORRHAGES from the nose, and those even to a degree of danger, are very common in scorbutic people, and they are at the same time very little disposed to exercise; the slightest injuries break their skin, and leave ulcerations, and this more remarkably so in their legs, where even upon the least scratch of the skin by the finger nails, excoriations will happen, which are succeeded by sores, which will remain for a considerable time.

The true and primary cause of the scurvy, is no other than a too long continued abstinence from fresh-gathered vegetables and garden stuff.

In the autumn seasons, after very hot summers, intermitting fevers have been very frequently known to follow, with anxiety of the præcordia, a slight yellowness in the eyes, and a urine somewhat of a jaundice colour; all which symptoms

denote obstructions formed in the abdominal viscera ; when plenty of resolving medicines have been given here upon the intermediate or well days, the commotions into which they are afterwards put, together with the humours by the consequent fits of the fever, often clear the stuffed-up vessels and viscera from their clogging matter, so as to dissipate the fever it produced : or if the fever continues on the patient, it then readily is cured by the use of the Peruvian bark, after once the viscera have been cleared from their obstructing matter. But when the bark is too hastily administered, before the febrile matter has been duly resolved and expelled, these patients are then left in a languishing condition, and by repeated doses of this excellent drug, given upon the first signs of the returning fits, before the vessels are opened, stubborn obstructions are often left throughout the whole mesenteric system of vessels, and give birth to melancholic, hypochondriac, and scorbutic distempers.

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In chronic diseases, gradually arising from vitiated humours, and which, by slow degrees, injure the functions of the body, we often find it very difficult to discover and point out such pathognomonic signs as may afford a certain diagnosis of the present malady; and this more especially in the beginning of it, where the health of the patient does not seem to be much injured, but rather, as it were, drooping.—However, authors are all agreed in this, that in the beginning a scurvy is accompanied with *an unusual sluggishness of body and mind, with a spontaneous lassitude of the whole body.*

The spontaneous lassitude, when it is the presage of an acute distemper, soon terminates in one; but if it arises from an obstructed or retained perspiration, it will go off by rest, a thin diet, and a mild diaphoresis, or in case this be neglected, it may sometimes produce a more dangerous distemper. But in the scurvy, this kind of lassitude slowly advances upon the pa-

tient, gradually increasing for many days, often weeks, without any other consequent complaint; and it has, moreover, this peculiarity to itself, that the weariness seems more troublesome to the patient upon waking out of a sleep, than it does at any other time of the day; whereas lassitude, arising from other causes rather abate after sleeping.

EUGALEN observes very justly, that the difficulty of breathing in scurvies may be readily distinguished from that which arises from other causes in other diseases, as it is not attended with a cough, wheezing, rattling in the wind-pipe, pungent, pain, orthopnæa, or any other complaints of the same kind, peculiar to distempers of the breast.

The legs and ancles frequently swell and subside, and the reason is evidently this: since the venal blood ascends from the lower limbs of the body, towards the heart, with difficulty, nature has therefore furnished those veins with a greater number of valves, and placed them

them either upon or betwixt very considerable and active muscles, by the pressure and motion of which, the blood in the adjacent veins may be accelerated towards the heart; and hence we often observe the legs swell in persons who sit long inactive, because the smaller veins cannot now easily empty themselves into the larger ones that are over distended. But since an unusual slothfulness and defective breathing, from very slight exercise, attend upon this malady, so as almost to entirely prohibit all muscular motion, the reason appears evident, why a swelling of the legs so often attends in this disorder.

The teeth and gums are often very early affected in the scurvy: ulcers are in no part more mischievous and difficult of cure than those in the legs, and more especially about the ancles: the whole circumference of such an ulcer appears brown, or spread with a bluish purple colour, while the bottom of the sore looks foul or sordid, the lips of it rough,

as

as if gnawed, and the matter weeping from it is of a fætid smell: they cicatrize or heal with great difficulty, and readily break out again.

Cocchi, a celebrated *Italian* writer, suspects the elephantiasis to be a species of the scurvy, and that the reason why it was more frequent in *Egypt*, might be owing to the great scarcity of vegetables in that country; and he very judiciously observes, that elephantiacal patients, who most despaired of being cured, after they were banished the society of mankind, on account of the foulness of the distemper, into remote deserts, were not recovered so much from the eating of vipers, as from their finding no other sustenance but such as plants and vegetables afforded them.

Neither do the internal viscera escape the fury of the scorbutic acrimony; and I have particularly observed enormous pains about the cardia and stomach tormenting these patients, which have increased upon them after taking nourishment,



ment, although their appetite to food has continued sharp enough. The pericardium, lungs, pleura, and diaphragm, have been found not only adhering together, but in a manner melted or mixed into one mass, in scorbutic persons, who have died suddenly by suffocation, with a great oppression at the breast; and yet it is something very wonderful, that under so violent an acrimony of the juices, the tender fabric of the brain should have been always found in a healthy and sound condition; and indeed the observations which have been made through the whole course of this distemper assure us, that the actions of this viscus have continued sufficiently entire. There are, indeed, sometimes, convulsions, tremblings, palsies, and the like, which attend this malady, but then they rather are the effects of injuries of the nerves and muscles, than of the brain itself; since we find the memory, understanding, reason, and judgment, remain unhurt.—It is to be remarked, that intense  
hunger

hunger continues as long as violent scorbutic persons have lived: this *POUPART* derives from the sharp humour which he found in the stomachs of those who have died of this malady.—The same author has observed in those who have died suddenly in this distemper, all the viscera corrupted, and in many the auricles of the heart were enlarged to the size of a man's fist, and filled with congealed blood. It is not at all wonderful that patients may become convulsed in the worst stage of the scurvy, although upon opening their bodies there may be nothing found amiss in their brain: for if only bile floating into the stomach can produce convulsions, which immediately cease when the foul humour is thrown up by a vomit; and if sharp periodical pains, with ulcerous humours lodged in the body, can produce a terrible epilepsy, what effects of this kind may we not fear in those whose very bones are almost all of them become carious, and whose ligaments are found eroded by the acrid  
fancies

sanies collected in the cavities of the joints, whose pericardium has been found almost eaten up, and the heart itself deeply ulcerated; and lastly, whose tender viscera are moistened by a filthy liquor, so acrimonious, as even to ulcerate the faces, and fetch the skin off the hands of those who have dissected such subjects?

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*Of the Cachexy.*

**T**HE continuation of life demands a constant recruit to the solids and fluids in proportion to what is daily exhausted.

Fat substances are very difficult to digest, and are long retained in the stomach, by which means they turn rancid, and become productive of much mischief: healthy and strong persons often experience, that after making their dinner upon bacon or other fat meats, they will, towards evening, belch up an acrimonious oil, which almost excoriates the  
throat

throat or fauces, and being spit into the fire will blaze with violence. If this fat oil remains for a long time in the stomach undigested, as it will, even after the other aliments are emptied into the bowels, it may, in the remaining tract of the intestines, produce a rancid crudity highly mischievous, unless it be corrected and reduced to a soapy state, miscible with watery liquors, by a plentiful flow of strong bile into the duodenum.

*Ab exercitationibus quies & ab ingentibus laboribus otium.* “Rest after accustomed exercises, and living idle after great labours and fatigues,” is very justly reckoned by ARETÆUS as one of the causes of a cachexy.

And so is too great strength or toughness of the vessels and viscera, because the excessive cohesion of the solids that compose them, will not yield enough to the impulses of the liquids they contain, whereby, of course, the equable motion of the blood is interrupted, so as to dis-

turb all the secretions. Whenever the due quantity of our healthy indigenious humours is, from any cause, much diminished, the assimilation of crude alimentary juices is but imperfectly performed; whence the nutrition of the body becomes depraved, and a cachexy ensues. But the greatest danger of all to be feared from this quarter, is when some profuse loss or discharge of the healthy humours has been suddenly made from the body, as in persons wounded, or women who miscarry, with excessive floodings or hæmorrhages from the womb, or the flux of the cholera morbus, which, in a few hours, almost empties the whole body; such bodies are, indeed, to be filled again, but very slowly; and to avoid a cachexy, they must not be allowed to take much aliment at a time, however keen and sharp their appetites may be.

A firm, robust, or healthy blood is required to pass the substance of the brain, in order to secrete the subtile fluid of the  
nerves

nerves that is required for muscular motion ; and as in cachexies the blood and its humours are depraved and of unhealthy condition, the nervous fluid will, of consequence, be variously deficient, both as to quantity and quality, in those conditions which are required in it. The chearful disposition to motion and exercise, so remarkable in healthy persons, will be here certainly wanting, and the cachectic patients will, with great difficulty, be enabled to draw their weak limbs after them. It is moreover observable, that whenever the free circulation, or course of the blood is hindered through the vessels of any certain part, the said part will be presently seized with a sense of weight ; when a violent phlegmon, for example, seizes the arm, it feels as heavy as lead ; and since a cachexy is frequently conjoined with a sluggish cold clamminess, and cacochymia in the humours, and renders them more difficultly passable through the vessels, it will be evident that a weight may be perceivable in the limbs from more causes than one.

It is well known that the humours contained in the veins are driven forwards through them towards the heart, by the motion which they received from the arteries, and since the veins have no pulsation, but gradually widen in their course, it necessarily follows, that the motion of the fluids, circulating from the arteries into the veins, will be checked or retarded; on which account we observe in many parts of the body, that the arteries and veins lie contiguous to each other, that the neighbouring vein may be compressed by the expansion of the beating artery, and promote the motion of the returning blood through them to the heart. Moreover, the muscles, when they contract, press upon all the circumjacent veins, and such as run betwixt them; and thus again is the motion of the venal blood very much promoted. But in those who are cachectic, the power or action of the heart and arteries is very languid, and

the motion of the muscles very weak; whence those helps are wanting which conduce to forward the return of the venal blood to the heart. Hence the larger veins are hardly able to empty themselves, and the smaller lymphatick veins, which ought to have absorbed the lymph discharged by the exhaling arteries, from the lesser and larger cavities of the body, as they cannot easily empty themselves into the larger veins, already too full, nor absorb the whole which the exhaling arteries emit, must necessarily fill the cellular membrane with watery humours, and produce oedematous swellings, more especially in such parts as are most distant from the heart, where the circulating blood is (*cæteris paribus*) proportionably slower than in others that lie nearer to the heart. Hence follows a swelling of the legs, more especially when the patients stand for a time with their body erect, or sit long with their legs pendulous, by which



which means the humours are forced upwards, contrary to the laws of gravitation; but when the body lies in an horizontal posture in bed, the humours contained in the veins may then more easily return back to the heart, the heat of the bed-cloaths also rendering the lymph more fluid, which was collected within the cellular membrane; for oedematous feet will always be cold.

Since the left ventricle of the heart can expel none of its contained blood into the aorta, unless it receives the same first through the lungs from the right ventricle, which last is now very scantily supplied, from the slowness of the returning blood into the veins, it will appear very evident why the pulse should be weak and languid. But as soon as these patients begin to move briskly, the over-filled veins being compressed by the action of the muscles, suddenly drive the

humours which they contain towards the right ventricle of the heart, which then becomes overcharged or oppressed, because it cannot send the blood so fast through the lungs, as it is urged upon it by the returning veins; whence a palpitation of the heart will follow, with a very laborious difficult respiration.

If the cachexy arises from a vicious diet, the foul humours lodged in the primæ viæ may be expelled by a prudent use of vomits and purges, and then by a proper regimen with corroborants.—If want of exercise has brought on a cachexy, motion and an active life will cure it; but if it be occasioned by a purulent abscess or scirrhus, seated in any of the viscera, it is then incurable, unless the cause can be removed, which is frequently not so easy a matter, nay, in general, almost impossible. If cachectic people are seized with a vertigo, loss or weakness of memory, tremors, and sleepiness, there is reason to fear the viscid and watery humours are already collected within the brain, whence there will be danger of an approaching

apoplexy; if they begin to pant and lose their breath upon exercise, we conclude the capacity of the breast and lungs are charged with a like humidity. We very seldom see those who are in the full vigour of life, and of a firm and strong constitution, subject to cachectic disorders but from violent causes; in which case they are not easily cured.

Those who would recommend the perpetual attenuation of our humours, never rightly consider the healthy nature of our animal fluids; for the blood of strong and healthy persons has a considerable spissitude or thickness, by which it is immediately disposed to harden into a solid cake, when drawn from the veins; whereas in weak or valetudinary persons the blood is much thinner, and less disposed to cohere. If this one practical observation had been considered, they would have easily perceived, that a too thin or dissolved state of the blood and humours, must render a strong and healthy person in the condition of one

that is weak and sickly. Moreover, each particular humour is required, to have a due consistence or degree of thickness, to confine it within the vessels to which it properly belongs; for if the red part of the blood were once to become as thin as the serum itself, the blood vessels would all soon be empty; or if it were to become as thin as the lymph which transpires through the exhaling vessels of the skin, the whole body would waste in a very short time. It is therefore plain enough, our fluids may offend by a too watery or inconsistent state, in which they are manifestly deprived of their healthy conditions. But since the thickest portion of the blood, namely, its red part confined within the larger arteries and veins of the body, receives its motion from that of the heart and arteries, and communicates the same, when so received, to the other humours, and as, at the same time, the natural heat is excited by the attrition of the same thickest part of the  
blood,

blood, and communicated to the whole body: therefore, when the said portion of the blood is too much diluted with watery liquors, which, at the same time, renders the solid vessels too weak and flaccid, the motion and attrition of the humours will be both ways considerably weakened, and the heat and warmth of the body will be proportionably lessened: hence again the said watery liquors will not easily be exhaled from the body, wherein it will remain distending the weaker vessels, and gathering itself into the hollow spaces of the body, will produce a cachexy or dropsy.

But besides the said over-thin state of the humours arising from an imprudent use of diluent liquors, there is another diseased fluidity of them observable, for want of a due pressure or condensation of them by the vital and elastic force of the vessels and viscera; or from the dissolving force of some diseased liquid intermixed with them, which melts down or destroys their due consistence.

Certain it is that the chyle prepared from the ingested aliments, has a less density than that of the red blood or its serum; because the chyle floats upon the surface of the blood, after it has been taken out of a vein, but in length of time, and by repeated circulations thro' the vessels and viscera, it acquires a greater density, and changes into our own nature. But it seems an established principle, that the lungs do, by their action, principally conduce to this greater density and assimilation of the chyle, which is all of it obliged first to undergo the attrition of the lungs, before it can move on with the rest of the blood, through the arteries of the body; and all the vital humours are obliged to pass in the same space of time through the lungs, while only a certain small portion of them flows through any of the other viscera. Moreover, the aorta is distributed over all the body and every different part of it, so as to send the nutritious fluid together with blood, through-  
out

out the whole system; but then the aorta receives all its blood from the left ventricle of the heart, into which the pulmonary veins transmit their blood that has first been pressed through the lungs, which last, therefore, seem to give a due degree of density to the chyle, and preserve, likewise, the firm texture of the blood itself. Hence the reason is apparent, why, when the lungs are diseased, we so often observe a consumption of the whole body, although no great waisting or it appears, either by expectoration or any other sensible discharges; sometimes, also, there are night sweats, arising from the too thin or dissolved state of the humours, not sufficiently condensed by the lungs, which distil thro' the cutaneous pores, or mouths of the exhaling vessels, relaxed by the heat of the bed cloaths. But since the same action which condenses the chyle, and renders it like the rest of our humours, is also employed in maintaining the sweet gelatinous and globular nature in all the  
rest

rest of our juices, which, in a healthy state, are not acrimonious, the reason thence appears, why a thinner state of our humours is commonly joined with a greater acrimony from the same cause; which acrimony requires to be moderately obtunded or corrected at the same time, that its too watery or thin state is rendered more consistent. Sudorifics and diuretics can only take place in a cachexy that inclines to a leucophlegmacy, or a dropfical anasarca; but not where the body becomes juiceless, and is decaying by a consumption or marasmus.

Alcaline salts, and the soaps prepared of them, are very efficacious in dissolving tough and viscid humours, but then they are not convenient when the patient is under a course of chalybeates: for steel filings readily dissolve in an acid that is prepared from vegetables, but if an alkali be added to the said dissolution, the iron precipitates, with the appearance of a yellow earth or ochre, which being entangled in the mucus of the first  
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passages, may harden into a solid coagulum hardly dissolvable, so as frequently to occasion much trouble to the patient: for this reason, therefore, alkaline medicines are avoided, during the time that a cachectic patient uses the filings, or other preparations of steel, which are commodiously exhibited in infusion in wines or strong-bodied ale.— And for this reason too the patient should use such a diet as is rather ascetic than alkaline.

When the body seems swelled with viscid humours, from too great a weakness of the solids, corroborant remedies will be of service; but when the humours, being in too dissolved a state, are drained or washed from the body, without being restored again by fresh nourishment, the vessels collapse and the whole body is destroyed by a slow marasmus, in which last case such remedies are required as gently moisten, and give a better consistence to the humours. Chalybeates in these cases, though proper,

per, should be varied according to the particular circumstances.—In a girl, for example, bloated or swelled with the green sickness, from a cacochymia of unactive mucous or viscid phlegm, iron or steel medicines should be given in a dissolved form, in a vegetable acid rather than in substance, because otherwise chalybeate powders, or steel filings, swallowed into the stomach, are apt to entangle themselves in the viscid mucus, and clog together, so as to pass on through the bowels, with little or no operation or effect on the body; but where the primæ viæ are charged with a sharp sourness, chalybeates are better administered in a dry substance, because at the same time that they obtund the sour acrimony, the dissolved steel will happily perform all its effects.

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*Of an Empyema.*

**P**ATIENTS under this disorder lie easy enough on their back, because the diaphragm descends much lower towards

wards the back and loins.—And for the same reason are they desirous of sitting upright in their bed, whenever a considerable quantity of purulent matter is lodged in the breast, because the weight of it in that posture presses down the diaphragm towards the abdomen, and thereby enlarges the capacity of the breast; and the breathing is thereby rendered more easy.

Those whose breasts are almost filled up with matter have red cheeks, and their countenance looks better, because in them the blood meets with a more difficult passage through the lungs, and of course the blood returning from the head by the jugular veins is more impeded in its reflux into the right cavity of the heart; whence the blood vessels of the face continue more than usually distended.—But a slow fever is usually the constant companion of an empyema, from the thinner parts of the matter absorbed and mixed with the blood. And as this fever

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fever gradually preys upon the habit of the body throughout, it is at length attended with an extreme leanness or consumption of all the fat: and since there is a good deal of this soft fat spread as a cushion under the globe of each eye, to sustain and facilitate their motion, therefore when the said fat is consumed among the rest, the eye-balls sink lower into their orbits or sockets, and the eyes are then said to appear hollow: and when the said fever has also consumed the fat that fills out the ends of the fingers, and constitutes the sense of feeling, the nails appear incurvated and more projecting. At the same time too a sharp heat is felt in the ends of the fingers, and in the palms of the hands, from the quickened or febrile motion of the blood through the more contracted vessels of these parts, that are yet more confined and compressed by the tendinous incumbent expansions, and are more dry or juiceless than other parts.

HIPPOCRATES has, with great care and industry collected together all the  
symp-

symptoms, by which a sure and ready diagnosis of this distemper may be obtained. He observes, that the side of the thorax which contains any considerable quantity of matter, so as often to yield no rattling noise, upon account of its being over-full, is more swelled than the opposite side; this is confirmed by the observations of our modern surgeons. And because the affected side grows hotter than the other, he therefore advises the whole thorax to be wrapped up in thin linen dipped in liquid bole or red earth dissolved or rendered very fine and thin by being well rubbed, and then directs an incision or cautery in the place which appears the soonest and most dry: or he likewise advises the whole naked chest to be anointed with a red-like liquid, and this on the same account; but then he very prudently observes that in this case several hands should be employed in rubbing in this liquid all over the breast, because a mistake might otherwise happen, as the part first rubbed in, would undoubtedly appear the soonest dry.

If

If a vomica has continued broken for four or five days, the physician ought closely to attend to the urine and stools, for if any matter be discharged that way, it is well; otherwise he must immediately, and without loss of time, have recourse to the operation of the paracentesis, which should by no means be deferred, if we are to expect any success from it.

We should never close up the external wound, unless the interior surface of the ulcerated thorax be rightly depurated, and afterwards thoroughly consolidated and cicatrised, for there might be danger of another empyema in consequence of such an incautious and imprudent treatment.

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VAN SWIETEN'S  
COMMENTARIES  
ABRIDGED.

By RALPH SCHOMBERG, M. D.

Fellow of the Society of ANTIQUARIES.

VOL. II.

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Quidquid præcipies, esto brevis ; ut cito dicta  
Percipiant animi dociles, teneantque fideles.

HORAT. de Arte Poeticâ.

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L O N D O N :

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**I** Now present the Reader with a continuation of the Abridgment of the fourth volume of VAN SWIETEN's Commentaries— as the number of observations, and the quantity of materials collected from a constant perusal of the best medical writers, made it impossible for one volume to contain the remaining part of the work; the very learned *Commentator* assures us that a fifth volume will positively be the last—when this makes its appearance, I shall endeavor, as soon as possible, to finish the whole of the Abridgment.

It

It has been observed, that I had omitted inserting the *Aphorisms*—this I did designedly; and for two reasons: first, because they would have swelled the book to a much larger size, than I imagined would be convenient; and secondly, because I seldom or ever through the whole course of the Abridgment treat of every particular as it stands related in the Aphorisms.

---

*Of a* PHTHISIS PULMONALIS.

**T**HREE things are requisite to constitute a *phthisis pulmonalis*.  
1st. A slow wasting of the whole body: 2. The cause of this consumption must arise from a depravity of the humors in consequence of a putrid cacochymia: 3. The seat of the disease must be in the lungs.

The cure of a wound in the lungs, is often much more tedious and difficult than in any external part of the body, for the air cannot be excluded, and the lungs, upon account of their office in respiration, so essentially necessary to life, can never be at rest, but in a constant and uninterrupted motion—physicians therefore very judiciously

B ously

2      *Of a Phtbisis Pulmonalis.*

ously recommend rest in an *hæmoptysis* or spitting of blood, forbid their patient's speaking, prescribe the mildest nourishment, and caution against every passion of the mind, in order that the lungs may be as little disturbed as possible; nor is this intended so much to prevent the return of the *hæmoptysis*, as that the ruptured vessel may be more speedily closed and consolidated.

Another reason why an ulcer of the lungs is often the consequence of an *hæmoptysis* may be accounted for, from the formation of this viscus: if the lungs be blown up and dried, and then cut asunder, they appear entirely cellular, not only because the extremities of the bronchia terminate in hollow membranes, but there plainly appears a cellular membrane, which fills up the intermediate spaces between these small vesicles in which the bronchia terminate, as we may very readily  
prove

prove by microscopical observation, after the vessels of the lungs have been properly injected; now, if it happen that these vessels being ruptured, the blood is thrown upon this cellular membrane, this extravasated stagnating blood growing putrid and acrimonious may produce a suppuration and an ulcer of the lungs: for the extravasated blood, which obstructs the air vessels of the lungs, may easily be thrown up by a cough, but that blood which is collected in the cellular membrane of this viscus, cannot so readily find a passage this way till it has corroded the nearest bronchia.—This fully explains the aphorism in *Hippocrates*, *A sanguinis sputo, puris sputum, malum*; spitting up of matter after a spitting of blood, is a bad symptom; this is not to be understood of a spitting of matter in a small quantity, which shews, that the vessel which was ruptured begins to close, but of such a

B 2                      spitting

4      *Of a Phtbifis Pulmonalis.*

spitting as discharges the pus in very large quantities, and are of a long standing, and argue an ulcer to be forming or actually existing in the lungs.—

Worse consequences are to be dreaded from an *hæmoptysis* occasioned by an erosion, than from a simple rupture of the vessels, for if the healing and closing of a vessel broke by some violent cause be difficult, (and an ulcer of the lungs often follows in consequence of such an accident) how much more are we to be alarmed, when the erosion of the vessels has brought on, not a wound, but an ulcer! *Galen* in these circumstances almost despaired of a cure——*Ex iis vero qui ulcus in pulmone habent ii solum insanabiles mihi videntur qui ex succi vitiosi erosione id possident, quorum aliqui ut salsulaginem sputum suum sentire se aiunt, nam longo arbitror tempore omnino opus esse, ut succi corrigatur*

*Of a Phthisis Pulmonalis.* 5

*gatur vitium.* Those ulcers in the lungs, which happen in consequence of a vitiated or corrosive humor, seem to be most difficult of cure, if at all curable—patients of this class say, that they perceive a brackish and saltish taste in their spittle, a long time therefore is in my opinion necessary before this acrimony of the juices can be corrected.

An *hæmoptysis* which proceeds from *anastomosis*, that is, from a dilatation of the mouths of the vessels, is the most easily cured of any; because no acrimony of the humors is implied, and the vessels, although dilated, remain uninjured. From the very effusion of blood a constriction of the dilated vessels will ensue; for a distension of the vessels depends principally upon two causes, the force of the heart impelling the fluids, and the resistance near the very minute extremities of the vessels. As soon as these open ex-

B 3

tremities

6      *Of Phtthis Pulmonalis.*

tremities give a free vent to the blood, their resistance will be considerably diminished, if therefore the body be kept still and quiet, the circulation of the blood will be calm and easy, and the vessels will contract of themselves by their own elastic power, their diameters will become lessened, and their mouths closed in such a manner, as to admit a passage to the blood no longer—thus the *hæmoptysis* will cease; the only ill consequence to be feared, is, that the blood thus discharged by anastomosis, may lodge in the cellular substance of the lungs, and by becoming putrid, produce an ulcer in them; yet as the passage from the pulmonary artery into the bronchia is easy, such an effusion of blood into the cellular substance of this viscus is the less to be apprehended, since the fluids propelled through the vessels, readily run where they meet with the least resistance.

The



The firmness of the vessels resists the fluids impelled into them; the greater therefore the strength of the vessels is, the less danger will there be of a rupture of them; but the greater the impetus of the blood is, which flows through the vessels, the greater force will be put on them.—If therefore an acrimony of the fluids be joined to an impetuous circulation, and at the same time to a weakness of the vessels, a still greater danger of a rupture of these vessels must be necessarily apprehended; now all these accidents are observed to happen in such persons as are subject to this disease. *Sydenham* observes, that persons of a warm constitution, but not so robust as others, are most commonly subject to a spitting of blood. In such persons the blood drawn from a vein, will appear of a very red and beautiful color, but the crassamentum is less firm, and the serum abounds more

8      *Of a Phthisis Pulmonalis.*

with salts, is thinner, and not so high-colored as we commonly find it in healthy blood; and as the color of the contained fluids is easily perceivable through the thin coats of these vessels, the skin will appear more transparent, because the cutaneous vessels are so small as not to admit the red blood—and the cheeks will appear of a fine rosy complexion, the bright red blood appearing pellucid through the thin coats of the vessels—*Galen* tells us, *quod color a succis proveniat non a solidis animalis partibus*; that the color proceeds from the fluids, and not from the solids of an animal.

A straitness of the breast, *ἰσχυρὰ ἔρεος καὶ ἀβασίης* as *Galen* calls it, ever denotes a tendency to this disease—from hence it will evidently appear how pernicious the custom is, of wrapping up children and swathing them too tightly, and in grown people lacing them—  
them—

Of a *Phthisis Pulmonalis*. 9

themselves up in tight stays, for the ribs by these means being depressed, the cavity of the thorax will be straitened, and the abdomen at the same time being compressed, the descent of the diaphragm be rendered difficult. Thus an evil habit disposes a naturally healthy body to a disorder, which physicians ever judged the forerunner of a consumption, where the parts were so constructed from a spontaneous formation. *Spigelius* very justly condemns this custom, and ascribes the frequency of consumptions in *England* to this cause; *ineptum est & ultra fidem perniciosum, illud studium, quod fere virgines adhibent, ut junceæ videantur, loris, & mortifero artificio, pectus in angustias cogentes, ignaræ, se angustando thoracem, januam tibi marcorique, aperire.* The care which young women take to appear of a slim and taper shape is absurd and incredibly pernicious; for  
whilst

whilst by stays and other injurious contrivances they confine their chest, they do not consider they are bringing consumptions and decays upon themselves.—

It is evident from phyfiology that many viscera are employed in changing the crude aliment into the nature of the human fluids; every one of which performs the function allotted to it: when therefore the viscera, by means of weakness, are unequal to their destined office, the fluids secreted from them, must necessarily degenerate from their natural qualities, the chyle will be crude, viscid, and even acrid; for unless the food can be subdued by the chylopoietic power of the viscera, they will degenerate into their own nature, be it into an acid, putrid or rancid acrimony, or even into a tough viscid glue according to the different matter of which they are constituted.

tuted. — Now the lungs are more liable to be affected by this fault in the fluids, and that, much sooner too, than any of the other viscera, because such a vitiated chyle, as soon as it is mixed with the blood in the subclavian vein, must immediately pass thro' the lungs, which therefore will receive the first injury in consequence of this degeneracy of the fluids. Hence *Bennet* observes, *qui bellariis & symposiis nimis indulserint, phthisi languorem importante maxime corripiuntur & periclitantur.* They who indulge themselves in luxurious eating, and in drinking to excess, frequently fall into a languid decay, and very dangerous consumptions; and this seems to account why the English are so frequently attacked with this disease; for they eat strong food, drink hard, and are not so fond of vegetables as other nations are; and inasmuch as the bile is of the greatest use in chylification,

tion, a greater depravation of the chyle is to be feared, especially if the liver, which is the organ which prepares the bile, is any ways defective.—

An acrimony already generated in the humors, or the viscera being too weak to properly assimilate the aliment may occasion a slight fever, such as we observe in these cases, for the lungs being irritated by the acrid chyle flowing through them together with the blood, a cough ensues, which is a dry one, because there is as yet no matter formed, to be expectorated, and as at the time when fresh chyle mixes with the blood, the passage of the blood through the lungs is somewhat troublesome and difficult even in healthy subjects, hence arises a greater heat, and fulness in the blood vessels of the head—because the jugular veins do not so easily discharge their blood. This is plain if we observe the countenances  
of

of people when they first sit down to a feast, and after they have done—their faces then become red and turgid—because the distended stomach prevents the free descent of the diaphragm, and thereby diminishes the expansion of the lungs, and crude chyle is at the same time circulating with the blood in large quantities. Those who are obliged to speak in public, experience the truth of this observation, and find that it is much easier to do it before, than after dinner.

Violent panting on the least motion, is partly owing to great weakness, and partly to the blood's being obstructed in its passage through the lungs—hence we see consumptive people do not perceive this symptom so much in the beginning of the disorder, unless the breast is so formed as to hinder the free expansion of the lungs—but when in the progress of the disorder, an ulcer

is

is once formed in the lungs, then this ulcer pressing upon those vessels which are as yet unobstructed, renders the passage of the blood from the right to the left ventricle of the heart, difficult—but in case the ulcer be open, a purulent matter will be continually discharging itself, and the patient will be less oppressed indeed in his breathing, but the body will gradually waste, and the strength fail, unless the ulcer can be healed, which it will not be an easy matter to do.—

*Bennet*, who was very accurate in every circumstance relative to this disease, observes that a bleeding at the nose, prevents a phthisis, or at least prolongs life; *phthisici omnes frequentiori, modo mediocri narium hæmorrhagiâ detenti, diuturniores. Si suffusio sanguinis cum pari per nares expressione arteriam pulmonariam simul occupaverit, minus periculosam, quam simplex in arteriam extrusio.*



*trusio.* All consumptive persons who have frequent moderate bleedings at the nose, hold out the longer for such a discharge; and if this hæmorrhage accompany a discharge of blood from the pulmonary artery, it is less dangerous, than if the discharge came from the pulmonary artery alone.—He farther remarks in another place, that a moderate periodical bleeding at the nose keeps off a consumption, and is much more serviceable than repeated phlebotomy — and confirms this observation, by the example of a youth who had received a consumptive habit from his parents, and who nevertheless enjoyed an almost uninterrupted state of health from the age of sixteen, to twenty-five, by means of a bleeding at the nose, for towards the decline of the spring, and throughout the greatest part of the summer he bled one ounce, sometimes two at the nose; at twenty-five,

five,

five, upon his taking an accidental cold in his head, this bleeding stopped, upon which his breast became greatly oppressed, and an hæmoptifis and other fymptoms of a beginning confumption became threatening,—he was bled, but to little purpose—but a copious hæmorrhage from the nofe returning, his breathing grew freer, and he efcaped the imminent danger he was in, without any confiderable alteration in his health.—If therefore a perfon was recovered by this means from an hereditary confumption, which is univerfally allowed to be the moft difficult of cure, what may we not hope for in other cafes from the fame falutary evacuation! And this, by the bye, fhould alfo be a caution to phyficians, never imprudently to flop this hæmorrhage by any remedies—however importunate the patient or his friends may be to have it done.—

An.

An hæmoptifis occurs moft frequently in the time of life between early youth or adolefcence and manhood.—This *Galen* computes to be from eighteen to twenty-five, and from that time to thirty-five he calls perfons youths, and imagined *Hippocrates* ufed the plural wörd *ætatibus*, ages, becaufe during that interval; between eighteen and thirty-five, both adolefcence and youth were comprehended.—*Aretæus* fays fimplly *juvenes autem ufque ad confidentem ætatem* (μεχρι ακμης) *post fanguinis fputum phtbifici fiunt*.—Youths till the time of full growth become confumptive after an hæmoptifis. There are three principal ways, by which in time of health fuch things are expelled from the body, as would, were they allowed to remain there, be very injurious to it; viz. by ftool, urine, and perfpiration.—when thefe excretions are not well performed, difeafes, and thofe fometimes of

very dangerous consequence, will often happen, but the lungs in these cases do not seem to be more exposed to injury than any other parts of the body; physicians have observed other excretions by which noxious superfluities are discharged from the body, which would be attended with great mischief if they were suppressed,—and in consequence of the retention of these acrid particles the vessels of the lungs become corroded, and an incurable consumption be brought on.—An acrid serum frequently oozes from the skin of the head in infants, which, drying into a crust, becomes foetid.—A like disorder sometimes prevails over all the skin, now should this by any accident or design be checked, terrible disorders and convulsions might be the consequence; nay the lungs themselves would be frequently affected by it, and a consumption ensue. I have sometimes

times seen a periodical asthma which lasted many years, brought on by a stoppage of this excretion; the fits of this asthma went off each time by a like cutaneous eruption on the face; about the time of puberty, the intervals of the fits grew considerably longer, and the person afterwards was quite freed of this complaint: hence we are taught, that the morbid matter in these cases is not discharged by the usual channels, but seeks a passage through peculiar ways, which the rules of art cannot predetermine, but must be learnt from a very diligent, close, and careful observation.—Experienced physicians therefore are very cautious how they check such excretions, though they are very troublesome, or how they drive them into other channels, but with the greatest circumspection. — Doctor *Mead* very judiciously remarks, *habent enim hu-*

*mores vitiosi suam quique indolem, cumque per modum crisis plerumque prorumpant quantumvis minui possint; vix tamen cum bonis ægri rebus per alios meatus, quam quos natura monstrat, e corpore prorsus exeunt;* the vitious humors have each their particular property, and as their eruptions are generally by way of crisis, though they may be lessened, they cannot with safety be discharged by any other ways than those which nature points out.—

*Hoffman* says that they are mistaken who suppose an abundance of wholesome blood of a good consistence to be the proximate and material cause of hæmorrhages; for in such constitutions the vessels are strong and the juices mild—he rather feared hæmorrhages in those whose blood abounded with a larger proportion of serum than of crassamentum, which is ever the case in subjects of a softer texture, and

is a proof that the blood is thin and acrid. It is certain however that bloody discharges checked, frequently lay a foundation for the most grievous disorders—and that it is therefore adviseable either to bring on these evacuations again, or to promote other discharges in parts less dangerous than the lungs. The hæmorrhoidal flux imprudently checked will bring on a dropfy or a phtbifis—*Hippocrates* was well aware of this;—*diuturnas* (says he) *hæmorrhoidas curanti nisi una servetur, periculum est hydropem succedere vel phtbifin.* In the cure of bleeding piles of long standing, unless one be left open, there is danger of a dropfy or consumption.——

That even the larger vessels may be broken by a great force is well known—how much more may this be feared of the tender vessels of the lungs—it seems rather strange that this should not often happen, and especially from

a cough, which violently shakes the whole chest, and at the same time forces large quantities of blood into the vessels of the lungs; hence we see, that in violent coughing the whole face becomes swelled and turgid, and the eyes quite red with blood—as the blood cannot return from the head by the veins, the right ventricle of the heart having no room for it, and its passage through the lungs is obstructed, while it moves faster than usual in the arteries—and in the *Tuffis ferina* as it is called, and which is sometimes epidemic, we see many afflicted with it grow black in the face and are almost choaked, whence a spitting of blood will often follow. The intestines of a boy were burst, who died in a fit of this cough—and *Hoffman* relates a case, in which he says one of the vertebræ of the back was broken by the violence of a cough.

In



In the last efforts of a woman in labor, when she is just at the point of delivery, the vessels are strained with a prodigious force, especially if the woman is somewhat advanced in life, and it is the first birth——and I have known a rupture of the vessels and an apoplexy follow upon these unhappy occasions. In bodies of a tender frame, the vessels of the lungs are so strained by this effort, that a spitting of blood is the consequence. It may hence be easily inferred, how these causes may still be more likely to produce these effects, when a great part of the vessels of the lungs are obstructed by a scirrhus or polypus — or when it is so much compressed by another humor, as not to admit the blood to pass freely through them—for then these pervious vessels of the lungs will have so much the greater force to sustain, if the motion of the blood be suddenly

accelerated by any cause.—In a young virgin who labored under a difficulty of breathing occasioned by a suppression of the menses, *Hoffman* observed an enormous quantity of blood thrown up by coughing, attended at the same time with a spitting up of several large, hard, fleshy substances; which on examination proved to be polypose concretions, and weighed above four ounces. The preceding symptoms and the hæmoptysis which proved mortal, were a very strong indication that the vessels of the lungs were obstructed with polypose concretions, which, on the bursting of the lungs, were thrown up together, attended with a great effusion of blood. — This spitting of blood we frequently observe in persons who imprudently drink down large quantities of very cold liquors, after having greatly overheated themselves with hard labor or violent exercise.—*Frallian* and *Galen* do both of them  
con-

consider a sudden and violent cold among the causes of a rupture of the vessels, not that it is effected by the cold itself, but because the coats of the veins rendered hard by the cold, resist a longitudinal extension and so are more easily ruptured — and he reckons a plethora or violent motion as the immediate causes of a rupture of the vessels—*Hippocrates* says *frigidum valde venas frangit & tussim citat ut nix & glacies.* *Hoffman* observes that just before an hæmoptoe comes on the patient frequently perceives a chilliness and constriction at the extremities, and more particularly a lassitude in his feet, a flatulence in the abdomen, costiveness, an oppression at his breast, and a difficult respiration: to these symptoms he adds, in another part of his writings, a shivering or coldness of the skin, a disappearance of the vessels on the hands, a pain  
in

in the back, *donec*, continues he, *sequente in faucibus titillatorio & secundum tractum arteriæ asperæ quasi pruriente sensu, sub calida ebullitione & undulatorio in dextro latere motu, ipsa eruptio sanguinis incidat*; till at length a kind of tickling sense and an itching is felt all along the aspera arteria, attended with a warm ebullition and undulatory motion on the right side, and then the spitting of blood comes on. — These symptoms I have myself observed to happen, though seldom or ever together in the same patient; and I have seen several persons, who had frequently been subject to an hæmoptysis, who knew it was coming on, upon feeling a kind of tickling in the aspera arteria, a slight oppression of the breast, and that undulatory motion sometimes in the right, and at other times in the left hypochondrium; in consequence of this foreknowledge they had immediate recourse

course to the lancet, and have thereby prevented the hæmoptysis for the present: *Aretæus* observes that an hæmoptysis may proceed from a disordered spleen or liver, but he adds, this is not easily or constantly produced from such a cause, as these viscera can more readily discharge their contents into the stomach and intestines. He adds however that it is neither impossible nor incredible, but that they may discharge themselves upwards through the lungs and the artery (he means the aspera arteria) since in fevers occasioned by obstructions in the spleen and liver, an hæmorrhage from the nostril on the side in which the affected viscus is situated, will ensue.

Experiments demonstrate that fluids injected into the pulmonary artery, easily pass into the bronchia; the injections with wax into the arteries of the lungs, render the vessels which  
branch

branch over the whole surface of the air-vessels of the lungs very conspicuous—if some of these small vessels be broken, or their extremities dilated, they may discharge a small quantity of blood, which stagnating in these parts, is thrown up afterwards in clots; it is farther to be observed that the cellular membrane every-where interlines the lungs between the trachea; and that when the lungs inflated and dried are injected with wax, innumerable vessels appear distributed over the surface of this membrane; if now, either a rupture or an anastomosis happen among these small vessels, the blood collected there will not be spit up, but stagnating on the outside of the air-vessels of the lungs, will form an ecchymosis, or effusion of fluids, such as happens in consequence of a bruise under the whole skin, or in a scurvy and other diseases

diseases arising from an acrimony of the humors which corrode the vessels. It is true, that such effusions, especially when they proceed from some external violence, are often gradually re-absorbed and disappear, but in scorbutic habits they not only sometimes remain for a considerable time, but they often degenerate into obstinate ulcers; and it is to be observed that blood discharged upon the lungs is detained by very tender membranes; so that if the fluid becomes more acrid by stagnation, or from its quantity distends these membranes beyond their strength, then bursting them, it will find a passage into the bronchia.—

That the lungs may be lacerated by a wound or some other violent cause is by no means improbable, and that some portions of the lungs thus lacerated, may be expectorated—but when no such causes have preceded, such an accident

accident is not at all likely. Such polypose concretions, are sometimes thrown up after a violent spitting of blood, but the blood in this case is discharged upon the bronchia, and unless it be immediately thrown up, it will coagulate there, and readily assume the figure of the vessel in which it is lodged; and the longer such a polypus remains there, the more dense it will become, and sometimes grow entirely white; if now we consider, that the patients upon account of their weakness from loss of blood, or by the advice of their physician keep themselves very still and quiet, abstain from talking, and suppress their cough as much as possible, it is not all strange, that part of the blood fallen upon the bronchia, should coagulate into a polypose substance, and after some time be thrown up by a cough, especially should the hæmoptysis return. The pulse is slow,  
soft



soft and fluttering at the time of an hæmoptysis, because the blood which comes from the right ventricle, passes lessened in its quantity to the left ventricle, as part of it is discharged into the air-vessels of the lungs; and it is to be considered at the same time, that men are generally terrified when they are seized with a spitting of blood, which occasions a panting, occasioned also by this effusion of blood on the bronchia—a brackish taste in the mouth frequently precedes an hæmoptysis, especially when caused by an erosion of the vessels from too great an acrimony of the humors.

Bleeding is adviseable in an hæmoptysis for two reasons; principally, that the quantity of the blood circulating through the vessels may be lessened, and the vessels by that means be less distended, and the blood returning through the veins in a smaller quantity

tity to the heart, the heart itself may contract less forcibly; by this operation an inflammation may also be prevented.

An hæmoptysis generally decreases after bleeding, nay often quite stops, unless some large branch of the pulmonary artery be torn or eroded; but as there is some reason to apprehend its return, it will always be adviseable to repeat the bleeding; the intervals between this operation, how frequently it should be repeated, and what quantities be taken from the vein, can only be determined by the particular symptoms which a physician will be the best judge of. The following circumstances should be particularly attended to; if the hæmoptysis stopped after the first bleeding, and the patient felt no pain in his breast; if the pulse was regular and slow but not full, if the heat of the whole body, especially at  
the

the extremities, was less than in sound health, the breathing free and easy, after a second bleeding, for three or four days — but as soon as the pulse grows full and strong, and the heat of the body and in the extremities, is equal to, or exceeds that of a person in health, if there be a tension, or an obtuse pain be felt in the breast, and the cough grows worse, immediately bleed again, even these symptoms appear but a few hours after the first bleeding, the greater or lesser quantity to be taken away, depends upon the symptoms likewise, for the whole intention must be to lessen the quantity of blood, that the vessels may be less distended, and to weaken the *vis vitæ*, that the blood may pass through the vessels with less impetuosity, and the ruptured vessel have a better chance to consolidate and heal, and the cicatrix now forming, and yet but tender, not break open afresh.

34. *Of a Phtthisis Pulmonalis.*

There can however be no determinate rule laid down, but attention must be had to the patient, and to the circumstance of symptoms.—An inflammatory crust has sometimes been observed upon the blood of persons seized with an hæmoptysis, though this does not frequently happen, yet the above described symptoms have called for repeated venæsections—we are not quite clear with regard to the nature of this inflammatory crust or size—if for instance blood drawn from a vein be received the into three basons, this crust will appear in the first bason but not in the rest; sometimes in the second and third basons only, though the blood has issued from the orifice in a full stream. I have seen a man who threw up a very large quantity of blood in an hæmoptysis, which was received into a bason, but it was not at all fizy, though the blood taken from his arm had a very  
thick

thick fizy coat upon it—so that this appearance only will not sufficiently determine us in the cure of an hæmoptysis. In general *Sydenham* recommends a frequent repetition of bleeding in the cure of this disorder—but it should be left to the discretion and judgment of the attending physician. It will always be safer, rather to exceed in this operation though it weaken the patient, than to leave him to the hazard of a return of the disorder. But bleeding is serviceable on another account. It is very evident that the ancients apprehended very great danger, when an inflammation or fever attended or succeeded a spitting of blood, and with very good reason, because under such circumstances, an ulceration of the lungs and an incurable consumption might be expected. *Galen* ever deemed it de-

sperate.—*Ætius* likewise strongly inculcates the necessity of trying every possible method to cure a wound in the lungs while it is recent, and before the inflammation begins; for if an inflammation comes on, there is little room to expect the wound will close, and the cure of the disease will be greatly protracted; for the pus and ichor must be cleared away after the inflammation is removed, and the patient afterwards be treated as labouring under a consumption. We find the same observation in *Hippocrates*, his words are, *sanguinem spuētibus confert, ut sint sine febre, & tussiant ac doleant leviter & ut sputum tenue fiat ad dies bis septem. Febricitare autem & tussire ac dolere vehementer, & sanguinem recentem semper spuere, damnosum.* It is well for those who spit blood to have no fever, and but a slight cough, to be without pain, and what they spit up to be thin  
for

for a fortnight at least — but to be feverish, to cough much, to feel great pain, and to spit up fresh blood, is very pernicious. Hence we may learn how useful repeated *venæsection* is in this case.

Cold water has been frequently strongly recommended in an hæmoptysis, and some eminent Italian physicians have experienced the happy effects of it when boldly administered—*Martin Ghisi*, who practises with reputation in *Cremona*, among other very useful observations relates, that while he attended a patient under this disease in the hospital, who was a very robust man, he suddenly threw up three pints of blood; the doctor immediately gave him water rendered extremely cold with ice, with such good effect, that the spitting of blood almost immediately ceased, and the patient kept well for three days, when

the hæmoptysis returning with violence, he was instantaneously suffocated before any assistance could be given him—but it was owing to his indiscretion, for he (heedlessly forgetful of the danger he had so very lately escaped) drank plentifully of some strong wine, and eat voraciously of some roast meat which his wife very officiously and imprudently had in secret brought to him.—He mentions another case of a youth who had a frequent spitting of blood attended with a violent fever, after repeated bleedings and other remedies unsuccessfully applied, he gave him water made extremely cold with ice also, a cup of which was to be taken every quarter of an hour at least—in a few hours the hæmoptysis ceased, the fever and cough abated, and in a few days he entirely recovered, and continues in good health.—

Astringent



Astringent remedies are also recommended here, or such medicines as are incrassating, and at the same time soften every kind of acrimony of the humors; sometimes remedies of both classes are combined——gum arabic, gum tragacanth, starch, the root, leaves and flowers of the greater comfrey; among the astringents we may class the leaves, roots, and seeds of the plantain, cinquefoil, pimpernel, tormentil, bistort, &c.

Rest is absolutely necessary, lest the motion of the blood through the veins accelerated by the action of the muscles, should circulate through the lungs with too great an impetuosity and in too large a quantity, and so endanger a relapse—hence it is evident how much a cough is to be dreaded in this disorder— which not only endangers the rupture of a vessel, but prevents the already ruptured vessel from closing

again.—A cough should therefore, by every method that can be thought of, be stopped by a prudent use of anodyne medicines, and the patient should for the same reason be warned not to talk much, or call out for any thing he may want—and for that reason there should always be an attendant in waiting in the room or a bell, so that the patient need not be under the necessity of talking or calling for whatever he wanted.—

The diet should be very mild, soft, and cooling, and nothing be allowed that is either acrid by nature, or that may easily acquire a considerable acrimony—the food therefore should consist of such farinaceous substances as are not very tough or slimy; of soft, mellow, thoroughly ripened fruits, well fermented bread, milk broths, soft vegetables, weak broths cleared of their fat, and boiled with rice, all  
which

which are agreeable to the palate though enriched with little or no salt. Some people are fond of giving their patients calves foot jelly, &c.—now it is well known that the feet of animals boiled for a considerable time, yield a very viscid kind of glue, which is used for mechanical purposes by artificers; such a viscid glue will form a thick tenacious chyle, which will rather oppress the weak lungs, than contribute to nourish the body; so that they are to be rejected in these cases, and thin diluted broths substituted in their stead; but when the patient grows better, he may be indulged with some white meat, as a chicken for example, though very sparingly—and such food should be given but in small quantities at a time, though often, lest the lungs might be oppressed by plenty, though of good chyle, too suddenly—for we observe  
even

even healthy people, after too hearty a meal, have their vessels very full and turgid; at that time the plenty of fresh chyle mixes with the blood, and the breathing becomes more short and laborious than it was before, partly from plenitude, and partly because the stomach being too much distended obstructs the descent of the diaphragm, close to which it lies—for a sudden repletion even of good fluids is much to be dreaded in this case.

New milk diluted with equal parts of water or barley water in winter will make a good drink; in summer, as more diluting liquids are then necessary, the drink may consist of the same, only in different proportions; two thirds water or barley water, and one third milk. A little sugar, or Venice soap together with some absorbents may be added, in order to prevent

vent its turning sour, or curdling in the stomach.—

Blood should be taken from a vein twice a year by way of prevention, though the patient appears seemingly recovered of the disorder; this should be done about spring and autumn, these being the seasons in which we observe changes in the human body; if he is of a sanguine constitution and in the vigor of life, he may be more frequently bled for the first two or three years—and the physician should very carefully attend whether the symptoms agree with those which appeared a little before the coming on of the hæmoptysis. When an hæmoptysis has been caused by an anastomosis of the vessels, there is reason to hope a cure like that of a fresh wound without suppuration, because the vessel is not injured, and the vessels contract and close spontaneously after the blood-

blood-spitting and repeated bleedings have sufficiently emptied them. — If from any violent cause a vessel be ruptured in the lungs, there yet may be hopes of closing the wound without suppuration, provided proper means are taken, unless it be very large indeed; but when the vessels have been corroded by the acrimony of the fluids themselves, in that case it will certainly be difficult to prevent suppuration; for then it is not a single wound, and the inflammation which is commonly about the lips of the wound, will not be taken off, because in order to bring this about, a mild disposition of the fluids is absolutely requisite—and it will be impossible in so short a time to correct such an acrimony in the fluids, as was great enough to corrode the vessels themselves.

Another

Another reason for apprehending a suppuration in consequence of an hæmoptifis, is when grumous blood is left in the lungs after a fputting up of blood—for while the hæmoptifis is diminished or ceafes, fome part of the blood remains in the orifice of the injured vefiel, and even in the bronchia themfelves; now as fuch patients muft be kept perfectly at reft, and breath as gently as poffible, fuch grumous particles of blood will fometimes remain there a very confiderable time; but when ftrong ftypticks have been applied, and efpecially if the hæmoptifis has been ftopped by drinking of very cold water, we fhall have reafon to fufpect that large clots of fuch grumous blood have been formed, and adhere to thefe parts. — *Si in ventrem effufus fanguis fuerit præter naturam, neceffe eft fuppurari*, fays Hippocrates; if the blood  
be

be preternaturally discharged into the belly, a suppuration must necessarily ensue. *Galen* in his commentaries upon this aphorism, has judiciously observed, that *Hippocrates* does not there speak of an effusion of blood into the belly properly so called; but into any other cavity; he adds at the same time that by suppuration, is here meant every kind of corruption of the blood, and not its being changed into what we properly call pus. The blood in a warm moist place provided the air may get at it will soon grow putrid, and thus will it by its acrimony influence and corrode the neighbouring vessels and encrease every complaint, and bring on a suppuration.—The ancient physicians certainly seem to have feared this bad consequence from grumous blood left after an hæmoptysis, and were for that reason very solicitous to remove it as soon as possible.



sible. Galen in the cure of a violent hæmoptysis, after recommending it to his patient to breath gently, to keep still and quiet, and after having directed bleeding says, *ubi hæc sunt facta, primum posca tum diluta tum tepida potui est offerenda; quo, si quis in viscere thrombus latitet, resolutus extussatur* (εὐλινχθεῖν) *atque hoc nihil vetat bis terve ternis horis facere;* when these things have been premised, a thin warm posset is to be drank, by which if any clot of blood be remaining in the lungs, it may be dissolved and coughed up, and there is nothing to contra-indicate its being repeated every three hours for two or three times together. Trallian is of the same opinion, thinking that not only the grumous blood may be thereby dissolved, but that a farther effusion of blood may also by that means be prevented, with an addition of vinegar, to which  
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the ancient physicians ascribed an astringent quality. Bennet certainly feared a consumption might be produced from grumous clots of blood long retained in the lungs; *si peractis sanguinis excreationibus pulmo minus sensibilis, aut pectoralia torpida, sanguinis reliquias per ἀνακαταρσιν non apprime repurgaverint, retenti sanguinis & ipsius pulmonis computrescentia suborta phthisin subsequaturam minatur*; if, when the spitting of blood is over, upon account of the lungs insensibility, or the pectoral muscles inactivity to exert their powers, the remaining blood has not been cleared away, there will be danger of a consumption in consequence of its growing putrid, or a supuration of the lungs.—It must be owned that we should endeavor carefully to remove the grumous blood, but it should be done with great caution, for fear we may excite a cough, and

and fo endanger a relapfe of the hæmoptyfis, which muft unavoidably be attended with danger: I own I never ventured to advife perfons troubled with an hæmoptyfis to take a poffet, and I have oftener advifed it three hours after it was ftopped—it is true indeed the ancients did not give oxycrate or vinegar poffet hot, but lukewarm only, which indeed irritates lefs, yet ftill it does irritate, neither can this grumous blood be thrown up but by a cough, which will ever be fafer, when the ruptured vefſel has already fpontaneously contracted itſelf, and that there is hope of its consolidating; beſides it is to be obſerved, that a clot of grumous blood ftopping in ſome branch of the *aspera arteria*, often has ftill another obſtructing the wounded vefſel, if ſuch a clot therefore be diſcharged, the other muſt alſo come away with it which obſtructed the wounded

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vessel, and an hæmoptysis come on again and endanger the life of the patient, which, should we even again succeed to stop, will yet leave grumous blood, which must again be removed.——

Doctor *Mead* has observed that those persons who were troubled with strumous swellings in their childhood or in their younger days were most subject to ulcerations in the lungs; — *experientissimum medicum Radclivium dicere solitum, phthises in nostris & frigidioribus regionibus esse plerumque strumosas; sæpissime itaque videmus in tabidis post mortem incis, pulmonem tuberculis seu glandulis induratis obsitum, quæ suppurantia pus expuerent*, that most experienced physician doctor *Radcliffe* used to say, that most of the consumptions in England were of the strumous kind; we therefore most generally observe in such bodies as have been dissected, and have died

died of this disease, the lungs filled with tumors or indurated glands which suppurating discharge matter. We frequently see persons subject to strumous complaints, have swellings in the neck for several months nay for several years, which nevertheless do not come to suppuration, and when they do begin to suppurate, it is only a part and not all of them—besides, it is farther confirmed by many instances that these tumors may be and are lodged in other viscera, and it appears farther that these tumors even in the same body, may be formed of different substances; sometimes the matter contained in them is whitish or grey, mealy, and more or less soft, and of various different consistences.—Sometimes they are every-where hard and scissile—in some we find matter which is like lime moistened with water, and which is not rough to the touch;

in some we find a hard calcarious substance, rough in handling, and concreted as it were into a fungous stone.—In the body of an asthmatic youth the lungs were found in part ulcerated, and partly full of such sort of tubercles filled with a chalky matter, the concave side of the liver, the spleen and the whole mesentery, were covered with a number of these tubercles. In a boy of four years old, who seemed perfectly recovered from a beginning consumption, but who died in convulsions, the lungs were found filled with such tubercles, some of which contained a thin pus, others again a substance as thick as new cheese.

If therefore the lungs be stuffed with such tubercles, and that they contain a thick calcarious matter which cannot be brought to suppurate but by the slowest and even most difficult methods,

methods, it is evident a man may die with a slow marasmus, (because the action of the lungs in forming the chyle is impeded) even before a purulent phthisis comes on——which however would most probably have happened had the patient survived much longer. We have many examples to illustrate this. —— A soldier twenty-five years of age, came to the hospital, he had a slow fever, dry cough, a slight oppression of the breast, his face was pale, and his body extremely emaciated——after two bleedings, he was put upon a milk diet, and in the evening they gave him syrup of white poppies——nothing did him good, he grew still thinner, his strength decayed, and he died very quietly, without a diarrhœa, which is generally the concluding scene in a consumption; his breathing through the whole course of his illness was not

at all laborious.—On dissecting the body, handling the lungs, they felt as if they were filled with gravel, and the lobes being opened, we discovered a large number of tubercles each as big as a pea, which contained a matter much resembling plaister but something softer. Another soldier of twenty-eight years of age, weak and emaciated, was afflicted with a very troublesome cough for eight months, on being brought to the hospital, he was put to bed with a slow fever hanging upon him, he coughed much, but spit seldom—and when he did the saliva was glutinous, and white, but never purulent, he could not bear to lie on the left side.—Various remedies were tried, but all to no purpose, slight sweats succeeded, sudden emaciation, a difficulty of swallowing, an aphonia, and at length death—but he never had a looseness. On dissection, the lungs  
were



were found every-where adhering to the pleura; every-where filled with very small tubercles, about the size of a grain of millet, when the lungs were squeezed, hard tubercles were observable as big as a nut, some of which being cut open were found to contain a white substance resembling soft plaister, one of them only contained real pus. In the upper part of the right lobe we found a tumor as hard as a stone, and as big as a small hen's egg—the author of these observations (*Barrere*) very justly remarks, that such a disorder was incurable when arrived at its height, and when the lungs were every where loaded with these hard tubercles—but where he luckily took it in time, he had saved many soldiers by sending them into a purer air up into the mountains.

Such tubercles, though they were originally hard and filled with a

chalky substance, yet will suppurate in time, and produce a consumption with an ulceration of the lungs; so that they may be reckoned among the causes of a pulmonary consumption. — It may so happen indeed, that these tubercles may be so numerous as almost to destroy the action of the lungs, and so kill the patient with a true marasmus, before the tubercles have any possible time to suppurate. Very many instances of such kind of consumptions occur in practice. A spitting of purulent matter, which in some measure relieves the patient, follows upon an obtuse pain felt deep in the breast, attended with a difficulty of breathing; the quantity expectorated gradually decreases, the small vomica heals up again, and the patient thinks himself quite recovered; but, as a new tubercle generates pus and breaks, all the former symptoms

symptoms return again in very few months after.--I have frequently seen repeated instances of this, and I have been assured by many physicians that they have observed the same thing.—The generality however of these patients die consumptive at last, though they hold out a considerable time before they sink under the disease, but when from any adventitious cause many tubercles suppurate together, in that case the patient dies much sooner.

After a mild, moist rainy autumn, during which the wind chiefly blew at south, and remained in that quarter the winter and spring following, a cloudy summer followed with very little rain; but the same wind still kept blowing as before, *Hippocrates* observed *quod ante incipientem æstatem atque in hyeme, eorum multi, qui jam subtabescebant longo tempore, tabidi decubuerint; quando quidem multis etiam*  
*dubie*

*dubie se habentibus tabes tunc confirmata fuit*, that just before the beginning of summer, and the winter following, many who were inclined to be consumptive, were actually seized with a consumption, and others who were in a doubtful state, fell into a confirmed phthisis. Might not they whose lungs were filled with hard tubercles be justly called phthisically inclined? Is it not probable enough, that such symptoms should arise in these patients in a constitution of the air such as *Hippocrates* here describes it, especially as he premises, *pluribus tusses aridæ nihilque tussientibus educebatur, atque voces non multo post raucescebant*. Many had dry coughs, but did not expectorate, and they soon after grew hoarse. It is probable, that this epidemical constitution of the air was so adapted to produce a phthisis, that they who were naturally inclined to this disease,

but

but had hitherto never been attacked with it, now began to feel its effects, and died.—*Hippocrates* adds, that he does not recollect any of his patients who were attacked with the disorder, to hold out for any moderate time as they all died much sooner than was in general usual in this disease.

If a spitting of blood continue for a long time, neither encreasing nor diminishing, it is most assuredly a very bad symptom—*Hippocrates* says, *quibus in pulmone tubercula fiunt, pus educunt ad quadraginta dies post ruptionem, hos vero transgredientes plerumque phthisici fiunt.* They who have tubercles in their lungs, spit up matter for forty days after they break, if the spitting continue longer, they generally become consumptive.

It may seem wonderful that when the wounded lungs have been almost entirely destroyed by suppuration  
(which

(which has sometimes been observed in practice) that the patient should not rather die of a sudden hæmoptysis, as the right ventricle of the heart would propel the blood through the pulmonary artery into the wasted lobe of the lungs.—This in fact now and then happens, though rarely, and the patients more frequently die of a slow consumption. Very many instances certainly shew, that when a suppuration is begun, there is less danger of an hæmorrhage. This we see in wounds and in amputations. When in persons subject to a spitting of blood (even when they have had returns of this complaint) a suppuration begins, the hæmoptysis soon ceases, although a constant cough, and that even pretty violent, still remains.—I have seen the whole kidney so consumed by an ulcer, that nothing remained of it but the outward membrane, yet no blood ever  
passed

passed with the urine, but mere pus only.—Perhaps some peculiar formation of the lungs may account for this difficulty.—It is well known that the lungs are divided into large lobes, and these again are subdivided into smaller lobes, each of which have a branch of the pulmonary artery, according to their greater or lesser dimensions, all which however united compose the great lobe.—*Ruyfch* upon examining the structure of the lungs, says, that the blood-vessels of one lobe did not communicate with those of another, a membrane dividing each from the other.—Nay, that each small lobe had its peculiar membrane distinct from the rest, and that branches of the vessels supplied only the lobes to which they particularly belonged——he says however that this observation was made upon a calf's lungs, but the same disposition did not always (if ever it did  
at

at all) prevail in human bodies.——  
However in another part of his writings he demonstrates the subdivision of the greater lobe of the lungs into innumerable small ones. *Helvetius* on examining the structure of this viscus, found that the arteries do not pass from one lobe to another, but that each of them supplied its own peculiar lobe, and that the larger branches ran between the lobes. *Lieberkuhn* a most skilful enquirer into the structure of the viscera, completed this discovery, and shewed a preparation of a part of the human lungs (divested of its external membrane) divided into small lobes, which hung down upon the *aspera arteria*; he injected three different branches of the arteries and one vein with an injection of different colors, and by this method evidently demonstrated, that there is no communication between the lobes by the  
blood



blood-vessels ; hence we may comprehend how some one small lobe of the lungs may have its vessels obstructed, may be inflamed and suppurate, and yet not communicate the disease to the neighbouring lobes.

Thus we understand how a slow consumption may gradually prey upon the lungs, without bringing on a sudden and fatal hæmoptysis, as the disorder gently pervades one lobe to another and small arterial branches supply each lobe with blood, the circulation thus remaining uninjured, and passing freely through that part of the lungs which is as yet in a sound state.—We are farther from the consideration of this structure of the lungs taught what these tubercles in the lungs are, which physicians have so frequently observed to be inflamed, and to suppurate successively.

It

It is however to be confessed, that the lungs have not always been found entirely destroyed in those who have died consumptive, though a very large quantity of pus had been daily discharged upwards—and the physicians have thence consequently concluded that this viscus was entirely consumed. I must freely own that this has occurred to me in practice—a very singular instance of which happened in the hospital at *Vienna*, where after a very copious discharge of pus by expectoration, the lungs were found entire, but every-where adhering closely to the pleura, and to the pericardium on the left side of the thorax: but which way soever they were cut, not a drop of pus or the least marks of a vomica appeared, but on opening the trachea some pus was found lodged there. Experience proves that a suppuration does  
not

not always confume the part from whence the pus arifes, and yet that when a great quantity of pus is daily difcharged, the body wafes away.— After an amputation of the breaft, or of a limb, furgeons often to their great regret, fee their patients wafte away, from an exceffive difcharge of matter from fo very large a wound — fo that all the fluids of the body, converted into pus, are carried off, and then the poor patient, who at firft feemed to be in a promifing way of recovery, finks under the evacuation——but a fhort time before the patient expires, all the wide furface of the wound grows dry, and when dead, there remains not the leaft appearance of any pus. I have feen very large ulcers in the legs, which had daily for many years together difcharged an amazing quantity of fetid ichor; and when upon the ufe of the bark, a laudable pus was

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formed, the wound began to cicatrise, and there did not appear the least loss of substance, after the wound was closed and entirely healed up.

When one lobe of the lungs is purulent, we sometimes find pus lodged in the other lung, for while the patient now much weakened, endeavors to spit, but cannot, the pus is pumped up into the aspera arteria, from whence it may easily fall into either lobe of the lungs. Doctor *Simpson* upon opening the body of a man who had discharged a great quantity of blood before his death, found a scirrhous on the upper part of the right lobe of the lungs, and at the same time a sinus full of matter, large enough to contain a man's finger; he also found a stone, and a quantity of water in the cavity of the right breast, but the left lobe of the lungs was entirely sound, well colored, and without any hardness; and  
he

he was furprifed to find pus iffuing from every part of the lungs while he was cutting into different parts of its fubftance, but the pus did not iffue forth in large quantities together, but by a drop or two at a time, fo that it is probable it might come from the branches of the afpera arteria, as they were fucceffively cut open.

It is not the red blood which is changed into pus, but rather fome of the thinner fluids fecreted from the blood, for fo long as a wound is bloody we fee no pus, but the veffels afterwards contracting, the furface of the wound grows moift with a thinner humor, which gradually turns to pus on the furface of the wound, if it be guarded from the air, for if the wound be expofed to the air, it all dries up and is covered over with a fcabby cruft, under which the pus is formed. By how much the matter fpit up in this

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disease deviates from the qualities of laudable pus, by so much *cæteris paribus*, have we reason to doubt of a cure; for whether this proceeds from the nature of the matter being too long retained in a fistulous ulcer of the lungs, and rendered more malignant thereby, or whether the ulcer itself constantly pours forth a sharp ichor of a different quality from laudable pus, there will always be danger, lest the evil should extend itself more and more, or that the pus rendered both more acrid as well as thinner by its retention, may be reabsorbed, and so infect the whole body in such a manner, as to render it entirely unfit for nutrition, and so cause the consuming away of the body. Physicians should attentively examine the saliva of consumptive persons, in order to form a proper prognostic from it. *Hippocrates* says, *phthisicorum in aquam salsam expuentium sputa si ad fundum*

*fundum tendant, cito pereunt.* If what is spit up by consumptive persons into salt water sinks to the bottom, it is fatal. — Almost all physicians after him have condemned the saliva when it is dense, and sinks in water — and have accounted this gravity of the matter as a sign that some parts of the solids, which were beginning to waste, were carried off, and being heavier than the water sunk down to the bottom of it. Purulent matter spit up will swim upon the surface, though sometimes a part of what the patient throws up will sink, while the other part will swim a-top. — *Hippocrates* for this reason directs the trial to be made with salt water, as it is specifically heavier than fresh water, and therefore whatever is expectorated must be much denser and heavier to sink to the bottom, as a confirmation of this prognostic. — But we are to observe

that this holds only, in saliva which is rarely purulent without any mixture of mucus, for the mucus which lines the trachea and bronchia is ever frothy and contains air-bubbles, and if it be mixed with the pus, or by its viscosity adheres to the outermost edge of it, the purulent saliva will swim on the surface, though properly speaking it is in itself heavier than the water; this will readily explain the reason why we often see it swim a-top, and then sink down into the water though expectorated at the same time.—for while the mucus still adheres to the sides or is mixed with the purulent expectoration, or the air-bubbles contained in the mucus are not broken, it will necessarily swim on the top, but when once the mucus is dissolved, and the air-bubbles dispersed, then it will sink to the bottom of the water.—In spitting up matter (says *Bennet*) that which lodges



lodges about the upper part of the trachea, is brought off without straining, by a slight cough; but that which is seated at the bottom of the bronchia is thrown up with difficulty. The same author confirms what *Hippocrates* has written by his own observations, and reckons among the mortal symptoms in a consumption *pus cænosum, ponderosum colorisque cinerei quod aqua injectum facile quasi ei commiscetur fundumque petit*: a filthy, heavy, ash-colored pus, which on being thrown into water easily mixes with it and sinks to the bottom. The matter spit up in consumptions has various tastes also. *Hippocrates* mentions *sputum crassum ex virore pallescens & dulce per tussim rejici*, the expectoration of a thick palish green, and sweet saliva by a cough—and soon after *quod sputum ore continens excreaturus illud detestetur*. And in the *Coacæ prænotiones* he says, *qui sup-*

72      *Of a Phthisis Pulmonalis,*

*purati futuri sunt primum salsuginosum  
spuunt dein dulcius*—before a purulent  
matter is expectorated the patient per-  
ceives a saltish thin and sweetish saliva  
in his mouth. — I have sometimes  
heard patients when they had just spit  
up matter complain of the nauseous  
sweetness of their spittle, and *Bennet*  
esteemed this symptom very pernicious,  
*ex profuso vitali neētare deflores-*  
*centes & arescentes strigosas periisse*, for  
he imagined the nutritious juices were  
excreted by this spitting, and there-  
fore the patients were destroyed by a  
consumption or marasmus, and he was  
the more confirmed in his opinion, be-  
cause he had observed in the body of a  
man who died after such a spitting,  
and who had sometimes spit up blood,  
that all the organs of respiration, and  
all the viscera appeared sound to view,  
but the lungs were every-where soft  
and had lost their tone—as also because  
this

this saliva when put on the fire, like all nutritious juices, acquired by heat the consistency of a whitish jelly— Very fetid saliva is a still worse symptom, as it indicates a putrefaction already begun, however *Bennet* seems to be of opinion that it is not always mortal, for he says the purest blood will grow putrid if it be deprived of its own vital heat.—Certainly grumous blood contained in the bronchia, or pus lodging there, and not soon excreted, may grow corrupt from the free access of air and moisture and heat of the place—for this reason he further observes, (when he is describing the symptoms of an incurable phthisis) a stinking breath to be a bad sign, but adds, when joined with a great panting and laborious respiration. — It is not very safe to be much conversant with persons in this stage of a consumption, for as the putrid effluvia of the  
the

the saliva may be drawn in with the air into the lungs of the by-standers, there may be danger of infection. Galen says *periculosum est consuescere his qui tabe tenentur, atque in totum cum omnibus qui putridum adeo expuant, ut domicilia, in quibus decumbunt graviter oleant*: it is dangerous to be much in company with people in very deep consumptions, especially when the breath is so fetid as to communicate its influence to the very chambers wherein they lie.—A man's wife expiring of a consumption, giving him a parting kiss, all that part of the chin which her lips had touched remained smooth ever after, though his beard grew thick all around it—his lungs however were never affected by it. Physicians have sometimes thrown what has been spit up by consumptive patients on burning coals, and if it was fetid, they prognosticated certain death to be very  
near

near approaching——but it is certain that all spittle smells ill when it is burnt, and *Bennet* therefore does not depend so much upon the certainty of this prognostic — the greater or less stench in the spittle when burning, may indeed be a sign of a greater or less corruption of the humors. *Hippocrates* accounts this a bad symptom but then he adds also—*si & capilli a capite defluant*, provided the hairs fall off from the head.——

A vomica may certainly break in such a manner as to discharge the matter contained in it into the cavity of the thorax ; this however happens but seldom in consumptive cases, as the pus is generally thrown up by the mouth.—but where it does happen, it is easy to foresee that there is very great danger, for we then may reasonably conclude that the lungs already ulcerated, are at the same time loaded with pus on all sides. Anxiety

Anxiety arises from an obstruction of the passage of the blood through the extremities of the pulmonary artery, now in consumptive cases, where this viscus is either gradually consumed, or filled with matter, this obstruction will necessarily happen, and this in a greater degree, the nearer the poor patient is approaching to his end, they complain of nothing more, nor are more desirous of relief than for this distressing symptom; the oppression encreases towards the evening, because the spitting decreases about that time, and the fever rises; and the more rapidly the blood moves through the obstructed vessels, the greater will the anxiety be. If a person in health runs very hastily and thereby quickens the blood's momentum, an anxiety arises in consequence of it, because the lungs cannot admit a passage to the blood so fast as the veins convey it to the right ventricle

tricle of the heart, hence unless the velocity of the blood be lessened by rest and quiet, sudden death would follow—as may be observed both in men and beasts who have run upon the stretch for any length of time—but in the morning when the fever abates, and the saliva concreted and collected during the night is expectorated, we find the consumptive patients grow better — the thirst in this disorder is occasioned by the putrid taint of the blood rendered acrid—and this will be still farther encreased by night sweats which dissipate the most fluid parts of the blood.—

Red pustules often happen, because the thinner fluid is drawn off by sweat, and the thicker part stops up the narrow pores of the skin — these pustules we observe in healthy persons in very hot weather.—*Bennet* among the signs of an incurable consumption, says a  
scurf

scurf on the extreme parts and on the skin, with a deficiency of moisture upon the external parts, is a bad sign—*Hippocrates* has observed the same thing.

From the pus mixing with the blood as it flows through the ulcerated lungs, the whole blood is corrupted, and the crasis of the fluids so broken down, that they issue from the body in great quantity in a colliquative sweat: but when the vital powers grow weaker and weaker, and the most fluid parts flying off by sweat, leave the remaining humors more viscid, the fluids carried towards the skin will pass with much greater difficulty, and here and there raise watery bladders upon the epidermis, somewhat like white miliary eruptions, only that they are somewhat larger.—*Hippocrates* was not ignorant of this—for after recounting the symptoms attending in the last stage



stage of a consumption he adds—  
*Ἔ φλυκταιναι per corpus nascunt.*—Watery pimples break out upon the body.

Swelling of the hands and feet is a mortal symptom, because the reabsorption of the lymph is rendered more difficult — and stagnates in the most remote parts from the heart. — The fluids and solids of the body are constantly changed by the hectic fever, are worn away, and destroyed by sweats and expectoration, and as they cannot be resupplied bring on that great weakness which attends these disorders—the dryness of the parts which are the instruments contrived to form and transmit the voice, occasion a hoarseness.

Falling off of the hair is also a fatal symptom, because it shews the fat and oily parts of the body to be entirely consumed and wasted away, and that the skin is quite dry and sapless—

*Huic si jam capilli ex capite defluant*  
(says

(says Hippocrates) *caputque velut ex morbo jam nudetur, & super prunas expuenti graviter sputum oleat, hunc intra breve tempus periturum asserito, & quod, enecet, alvi profluvium fore.*—The humors are driven inward, and being dissolved by a putrid malignancy, rush on the intestines and produce a fatal diarrhœa.—*Aretæus* takes notice of the same thing.—But white fæces are most dangerous of all, for in this case all kind of nourishment is drained from the already too-much exhausted body. A vomica of the lungs which follows upon a peripneumony is in general of a larger size, and when it breaks discharges a greater quantity of matter all at once, than that which happens after an hæmoptysis, which are frequently smaller, and consequently discharge a less quantity of pus—less is to be feared when the vomica breaks and discharges the pus from the body, than

than when it is reabforbed into the blood.—In external abfcesses therefore, unless they be very large indeed, and difcharge a great quantity of matter when opened, we may almost be certain of a cure; but it is quite different in an ulcer of the lungs, for the blood of the whole body is propelled through them from the right ventricle of the heart with a rapid motion, and constantly rubs againft the ulcerated part; whatever is abforbed by the mouths of the veins on the furface of the ulcer, paffes quickly by a fhort paffage to the left ventricle of the heart and is directly conveyed with the blood circulating through the aorta to all the parts of the body, for the pulmonary veins are foon emptied, and therefore it will be more eafily reabforbed——this will evidently prove how much greater danger there is from a purulent infection of the blood in the cafe of an ulceration

in the lungs, than in any other part whatever.

In order to prevent the pus infecting the blood, three things are primarily to be considered—first, that the pus do not remain long in the vomica, so that there may be less to be feared from reabsorption, and this is to be brought about by promoting expectoration and using mild detergents for the ulcer. 2dly, That whatever pus is absorbed be purged off and expelled out of the blood as soon as possible, lest by being too long retained it may do farther mischief; and this may be obtained by the usual excretory channels, the intestines, kidneys, or by the pores of the skin. 3dly, Such remedies are to be administered, as do efficaciously oppose that corruption of the humors, which happens in consequence of the reabsorption of the pus into the blood.—

In

In endeavoring to answer the first indication by expectorant and detergent medicines, the physician must take care to do nothing which may impede the healing of the ulcer in the lungs. Now it is known, that if a surgeon was continually to deterge an external ulcer it would never heal; for laudable pus should be left quietly in the ulcer some time, that under it the diseased part may be separated from the sound, and that, that what is lost and wasted may grow up again. Nay, a laudable pus will never be formed unless the humors effused from the mouth of the vessels remain a considerable time in the ulcer. The same thing happens in an ulcer of the lungs, we are therefore constantly to promote expectoration, because too frequent a cough exasperates the ulcerated parts and prevents the formation of a laudable pus.—It is adviseable therefore to allay the trouble-

some cough by anodynes, that the lungs may have rest at least in the night time——by which means we shall find next morning that the patient is relieved by throwing up a good and well-concocted pus; and while the cough does not agitate the lungs, there will be room to hope, that under the good pus, we may expect a consolidation of the ulcer; so that if the cure proceeds well the quantity of pus will daily gradually decrease without that anxiety which usually attends when pus is too long retained in the lungs——*Bennet* is very just in his remark when he says, in the day time, when the spitting comes on, expectoration by lenient medicines only should be promoted, because we then have nature co-operating with us—he at the same time recommends us to encourage a free perspiration, for by that means the humors will have an uninterrupted  
passage,

passage, and nothing be repelled upon the internal parts, which might oppress the lungs.—

At the same time it will be necessary to direct gentle detergents to the ulcerated parts; in case the pus be rather tough and viscid, and expectoration difficult, a mixture composed of oxymel, vitriolated tartar, and the syrup of the five opening roots will be of use—if there be a hoarseness, and dryness of the fauces, infusions may be prepared of maiden hair, parietary, scabious, coltsfoot, nettles, &c. which may be sweetened with honey, and drank warm often in the day. If a tough viscid mucus at the same time should oppress the lungs, which does sometimes happen, smallage, ground oak, hyssop and other such-like attenuants may be directed; nor are we to fear any thing from the warm aromatic power of these plants, as they

are first to be steeped in a large quantity of water; it will not be amiss to add a third part of milk to such infusions—by these means urine and sweat will be promoted, and so the pus which has been absorbed into the blood be expelled by these excretions.— These infusions should be drank plentifully *by day, and not by night*, so that the patients may not be disturbed of their rest, which is so necessary to them. The second intention is to guard the blood against the purulent taint, by expelling the reabsorbed pus out of the blood as soon as possible, as well as every other fluid which may have been so altered by this taint as to degenerate from a state of health; for in order to heal the ulcer it is absolutely necessary that mild and untainted humors should circulate thro' the vessels.—

Besides



Besides the remedies, which by obtunding, are capable of weakening any acrimony, or of destroying it by an opposite quality, physicians have always endeavored to expell it from the body, by the channels which nature ever employs to discharge acrid particles from the body, and for this end to encrease the natural secretions and excretions — viz. by urine, stool, and by the pores of the skin. Now as the urine even in healthy people contains the saline and more acrid oily particles of the blood, all physicians have universally allowed its secretion and excretion may very safely be augmented in order to abate the acrimony of the humors, and of the blood——infusions of vulnerary herbs encrease the quantity of urine, and therefore may be plentifully administered; the native balsams also have

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their

their use, as they have apparently a diuretic quality. But we should be more cautious with regard to the evacuations by stool or sweat; for we observe in dangerous consumptions, the unhappy patients sink under nocturnal sweats and colliquative diarrhœas.—No prudent man therefore will attempt this method, when the fluids already dissolved by a putrid taint, issue at the pores in the first sleep, or when the blood dissolved and broken down, is expelled by the meseraic vessels into the cavities of the intestines, and brings on a fetid diarrhœa—in that case, the disease is desperate and beyond the power of art—but in the beginning of the disease before the strength of the patient is too much exhausted, and the body too far emaciated, these methods may be tried with a tolerable degree of success; but it  
requires

requires prudence and great circumspection and we must at the same time be very attentive whether the patient feels himself relieved by it or not.— Such sudorific medicines as encrease the heat and momentum of the fluids and add to the acrimony, are undoubtedly to be exploded, those are only to be chosen which are mildly aromatic, and even those should be infused in a large quantity of water, such as the decoctions of the three sander woods, of saffrafras, &c.—two ounces of this taken warm every two hours in the day time and in the evening on going to bed four ounces, and the same quantity again early in the morning — by this method a gentle equable sweat is generally procured, by which means the acrid particles will be excreted from the blood, and a mild diluting vehicle be afforded to the body.—Native balsams beside their aromatic fragrance,

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contain also an acid, which prevents putrefaction.——Myrrh has frequently been given in consumptive cases — which according to the admirable experiments of the learned and judicious physician doctor *Pringle* is a powerful antiseptic, far exceeding sea salt in this quality.——We are indebted to this gentleman for many excellent observations tending to elucidate the effects of the remedies generally recommended by physicians; as chemists observe that putrefaction produces a volatile alkali, it was apprehended that this disposition to putrefaction might be increased by such things as contained this alkali, and yet physicians tell us that crawfish boiled and bruised in their own broth, are very proper food to consumptive people.——Now it is well known that these fish have a kind of urinous smell, not unlike a volatile alkali—the *Seltzer* waters which contain  
a fixed

a fixed alkaline salt, are very safely and advantageously given to persons in a consumption, especially if mixed with a third part, or even with an equal proportion of milk. *Avicenna* advises the plentiful use of sugar of roses, and orders the patient to eat of it *omni die quantum potest, quamvis multum sit, ita etiam et cum pane*—as much as he possibly can to a large quantity, every day, and that even with his bread.—He gives us a case of a consumptive woman who was at the point of death; but, says he, *tunc surrexit quidam frater ejus ad eam, curavit eam hac cura tempore longo, & revixit & sanata est, & impinguata est, & non est mihi possibile dicere summam ejus, quod comedit de saccharo rosaceo*: her brother came to her and recommended the use of this remedy for a considerable time, she escaped the disease of which she was perfectly cured and grew fat upon it,  
nor

nor is it scarce possible for me to tell the great quantity she eat of sugar of roses—he also extolls troches of camphire—how perfectly does this agree with doctor *Pringle's* observations? he observes that there is a powerful antiseptic quality in sugar, and thinks it is owing to the great use of it, that fewer putrid diseases occur than formerly; and as to camphire, he says that two grains of it only, were more efficacious in preventing putrefaction than one drachm of sea salt—he also observes that there is a very powerful antiseptic virtue in the Peruvian bark. *Morton* recommended the use of the bark in this disease. *Torti* owns that he gave the bark to many consumptive patients not too much worn down by the distemper, and always found it procured sensible relief for some days, and sometimes though not always, with a manifest interruption of the febrile

brile exacerbations — but the disease soon got the better, and pursued its course even to the last period of life; yet he believes he once preserved a lady of quality who was with child by it, and kept her alive till she was delivered.—He says however that he had seen a boy who he imagined to be consumptive, and was at the same time afflicted with a *spina ventosa*; at the request of the boy's father, he reluctantly gave him the bark, expecting no good from it, but he afterwards met him walking about quite strong, ruddy, and full of flesh, insomuch that he scarcely knew him again, the lad was not only cured of his consumption but of the remains of the *spina ventosa*. He afterwards relates some other instances of consumptive persons restored by this medicine—he does not indeed deny that in some cases it proved unsuccessful, but he declares nevertheless that it did

did no harm. This worthy physician gave it with reluctance, not expecting any advantage from it; and was therefore the more amazed at its success. I have myself frequently tried the bark in the beginning of a consumption, and never had reason to be sorry for the trial; I remember a lady to whom I gave it in various forms for a considerable time, who had a very troublesome cough, a slow fever, and was emaciated; no hæmoptysis had preceded; and though her strength was much exhausted, and she spit up purulent matter, and even had a vitiated conformation of the chest, yet she recovered perfectly.

The following case proves how efficacious sugar may be—a youth in consequence of hard drinking and excess of venery, had got a perpetual violent cough, he spit up vast quantities of matter of various colors, he labored  
under



under a straitness and oppression of breathing, had a fever, and was almost worn away to a mere skeleton, his strength was greatly impaired, and his case seemed desperate: he longed very much for garden strawberries, and his physicians consented to his eating them; in three weeks time after having eat as much as cost above five and forty shillings, he was so much altered for the better in every respect, that he actually recovered in about two months time—this was in all probability owing to the quantity of sugar he had eaten along with his fruit.

Small beer without hops, milk whey acidulated with the juice of wood forrel, of China oranges, pine apples, &c. were much recommended by *Bennet* as a constant drink to consumptive patients. Persons in this disease, who expectorated a fetid purulent matter, have been recovered by drinking waters

ters which were not only ferruginous but aluminous also.—Now doctor *Pringle* has demonstrated that alum possesses a more antiseptic quality than other salts; perhaps we might here refer to an observation of *Tulpius*, concerning a woman who by neglecting to be bled, had gathered a great deal of pus which she spit up in such large quantities as to fill a large basin, and infect a very spacious room with the stench of it; this poor creature was as emaciated and wasted as if she had been in the very last stage of a consumption; after having labored under this disorder for about four months, she longed for raw oysters, which she eat voraciously, and with such a happy effect, that the symptoms all of them presently abated, and she soon perfectly recovered.—*Hippocrates* advises salt meats to promote expectoration in purulent cases.

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The evacuation of pus by expectoration is far safer than by any other means; but this is not to be effected but by a cough, hence such remedies as excite it, are recommended; for by a cough the lungs are cleared, but we are to observe at the same time, that if it be violent it exasperates the ulcer; such remedies therefore should be administered, as render the pus which is to be discharged by expectoration easy to be carried off, and yet not so as to do mischief by an acrid stimulus.—

But when the pus is concocted, and of a laudable consistence, it is brought up by coughing, and that without the least trouble; and this chiefly happens in a morning, after a good sleep, for then the lungs have been for a long while in a state of quiet, and only moved by gentle breathing, and the consolidation of the ulcer begun under good pus—but the same expectorating

remedies are not alike good in all cases—if the saliva be naturally tough, or if a viscid mucus be excreted, together with a purulent spitting, and with difficulty, an infusion of hyssop with simple oxymel, or with oxymel of squills will be of use, or if these be judged improper milder infusions of vulnerary herbs may be administered, all these infusions drank down mix with the blood, and are conveyed to the ulcerated place; hence physicians have thought of external remedies for this purpose also, though much service cannot be expected from plaisters and ointments.—Steams and vapors may be of use, as they may every-where come into contact with the whole aërial cavity of the lungs, this *Bennet* approves of much, and relates many cases, to prove the happy effects of this method—it may however seem surprizing that he should use orpiment reduced into troches with the white of  
an

an egg for a fumigation as it has been described by the ancients under the name of arsenic, and therefore accounted a poison by many—but what we at this day call arsenic was indisputably unknown to the ancients, and orpiment in many of its qualities much resembles sulphur, and is improperly called citrine arsenic, as it is harmless enough. Air replete with sulphureous vapors is recommended as very salubrious in this case by physicians, and therefore do they send their patients to Mount *Tabio* particularly, which is near the city of *Naples*. *Mead* recommends fumigations with frankincense, storax, &c. — I have imitated this method in a vomica which was still whole; I contrived a steam of hot water to be constantly conveyed through a pipe, near the bed of the patient, and when I found he could bear it well, directed it still closer to him, so

that he might for a long time breathe a moist and warm air, by this method I gained my end, for the vomica broke sooner than it would otherwise have done; I also ordered fumigations with frankincense, amber, storax and benjamin, so that the whole room might be impregnated with them, increasing the quantity by degrees, for fear it might bring on too violent a cough, which would have done harm. Patients bear these fumigations tolerably well, but the amber is rather more irritating, as it is melted by the fire into a pretty hot oil and a volatile acid salt, and benjamin though its odor be fragrant enough should be sparingly mixed with the other ingredients for the fumigation, because it has an acrimonious steam, which when received on a paper cover, condenses into small parcels of a snowy color, which are sold in the shops under the name of flower of benjamin,

benjamin, and are of so pungent a nature, as to excite a burning kind of sensation when put to the tongue.—I have used the steam of benjamin, that the vomica, having first of all been softened by watery steams, might suddenly break from the violent cough which it excites.—

We are however to observe, that it is not every remedy will send up its virtues in exhalations, and under that form be carried to the lungs—emollient herbs boiled in decoctions, and given in vapor, make a very good emollient and moistening steam, though their efficacy remains behind, and it is nothing more than a watery steam—and so are decoctions made of astringent remedies, which are now and then prescribed to contract the lacerated vessels in the lungs, which nevertheless they do not; the water indeed relaxes, and the

astringent qualities remain fixed and do not ascend with the water.—

Moderate exercise such as the strength of the patient impaired by the disease can support, is of great service, for muscular motion accelerates the return of the venous blood to the heart, which in consequence contracts more in a given time, thus will also a greater quantity of blood be driven with a greater velocity through the lungs; by which means the purulent matter will sooner be discharged from the viscus, and be expectorated, especially in the morning, when a quantity of digested pus has been accumulating during the time of sleep. Perspiration will at the same time become more brisk, and the air being more frequently drawn in and breathed out of the lungs, will perform the office of an excellent deterfive remedy, more especially



ally if it be the pure clear air of a healthy country place.—But caution is very necessarily to be used here, for not only the cleaning of the ulcer, but the healing of it becomes necessary.—*Bennet* very sensibly advises great care with regard to the motion of the body by day, and moderate exercise especially in persons of a warm temperament and delicate make; he at the same time recommends the lower parts of the body to be well exercised — but very strongly condemns all violent motion of the upper parts—however where the chest and adjacent parts are of a lax habit and cold temperature, the muscular motion of the arms and hands will be of use.—Now riding on horseback is of great efficacy in this as well as many other chronic diseases; for by it the whole trunk is perpetually agitated, and the air acts with greater force upon the lungs.—*Sydenham*

much approves of this exercise and used it with great success upon many occasions, even in the most desperate stages, when night sweats and diarrhœas threatened the life of the patient; he cautions the patient however to lie in dry sheets, and to ride far enough. I have known some sailors and fishermen, who having an ulcer in the lungs became coachmen, and were perfectly cured.—Riding is an exercise which should be used in a morning, and not upon too full a stomach.—A country air is useful, not entirely upon account of its pureness, but because as the patient grows stronger, and freer from care, he may be amused with slight rustic employments, another motive which recommends the country is, the fine fragrant steams arising everywhere after kindly showers, which greatly conduce to refresh and invigorate.—

If the prudent use of anodynes be neglected in the cure of this disease, little success can be hoped for; some are afraid, that the spitting may be suppressed by opiates, and the lungs be more loaded, but I can truly assert, that after a quiet sleep I have always observed a more easy and free expectoration in phthisical persons in the morning, and the pus spit up had every requisite good quality; it may render the patient costive indeed, but this is of no bad consequence, for stools may be easily procured by an emollient clyster.

*Of a DROPSY.*

**A** Dropfical fwelling of the legs and feet is very frequently obferved to happen after acute difeafes. It is at prefent known that there are veffels in the human body which convey fluids thinner than the red blood—fo that if a free paffage of thefe fluids be denied, the veffels will become diftended, and a dropfical fwelling will enfue. But thofe arterial veffels, which tranfmit a fluid thinner than the red blood, at their very origination, (where however they are largeft) have fo fmall a diameter, as naturally will admit of no globule of blood, fo that large tumors can fcarcely happen in confequence of obftructions there.—But the cafe is very different in the venous veffels which convey the lymph back towards

towards the heart, and discharge it into the larger veins, or into the ductus thoracicus, which may be considered as a lymphatic vena cava. These veins before they send the lymph to the common receptacle, are not inconsiderable in their size, although collapsing after death, they almost elude our sight; yet by inflation, injection, and many other methods they may be rendered sufficiently conspicuous. *Bertini* a very able anatomist, not only says he observed many lymphatic veins in the kidneys, but farther declares, he saw a large trunk of it half the size of a goose-quill. He very candidly at the same time, informs us, that these lymphatics appear most plainly, even without any artificial assistance, when the body is opened, when it swells, just when it is tending to putrefaction; for in that case the cavities of the body swell in consequence of the expansion of the  
air

air from the putrefaction, and this not only happens in the larger cavities, but in the cells of the adipose membrane also. The bodies of drowned persons for this reason float, as soon as they begin to putrefy, the tumid abdomen chiefly rising above the surface of the water, but as soon as the belly bursts, an intolerable stench follows, and the body sinks again. As the lymphatics therefore begin to swell, at the same time that the air, arising from or rather let loose by the putrefaction, distends the cellular membrane, he concludes, that there is in living bodies a communication between the lymphatics and the cellular membrane, and that when the lymphatics are diseased, the cellular membrane will of course swell with extravasated lymph. If therefore the free return of the venous lymph towards the heart be by any cause whatever obstructed, the larger  
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as well as smaller cavities of the body may become filled with water, and the lymphatic vessels be distended. But as anatomists have very manifestly discovered valves in these vessels, it will be very difficult to force the lymph back into these vessels, the parts between the valves will become turgid; this possibly may be one of the true causes of hydatides.—

The whole body through all the external and internal surfaces of it is perspirable. This is very evident in very intense cold, where we see it in the form of a steam exhaling every-where from the skin, the lungs and the inside of the mouth——this exhaling moisture in healthy subjects is reabsorbed before it condenses into a sensible fluid—if therefore from any cause whatever, this resorption of the perspirable exhalation be impeded, it will collect and condense into water, and so  
fill

fill and distend the cavity in which it may happen to lodge. Hence it is very certain that a dropsy may be either universal or particular. Every collection of an aqueous serum is by no means to be deemed an hydrocephalus, unless the parts are so flexible as to admit of distention and to enlarge the capacity of the head, in that case indeed it may be called an hydrocephalus. This disorder however seldom happens in adults; but is generally a disease of infancy, and to which great attention should be given, as it otherwise will be difficult of cure.

An hydrocephalus in the external parts of the head only, is a very rare disease. The dura mater, it is well known, adheres so closely to the cranium, that it cannot be separated from it but with the utmost difficulty, and therefore it will not be so easy to find water collected between the cranium  
and



and this membrane, as it will be between it and the pia mater, for though they are very contiguous to each other, yet do they not adhere so much but that they may and do admit of an intermediate moisture. The arachnoide membrane, which lies close to the pia mater, is of a cellular substance, and is therefore very easily inflated and distended with air, as we may easily remark in dead bodies, when it is carefully opened with the point of a lancet—between this and the pia mater lymph may very readily be collected, as is frequently observed in such as have died lethargic; we perceive a sort of a jelly-like substance about the brain, as the collected lymph is every-where distributed through numberless small cells, and a thin lymph readily follows upon making a puncture.—

That the lymph contained in the ventricles of the brain is the cause of

an hydrocephalus is very evident from a variety of observations — it seems however surprising that so great a quantity of lymph should be contained in the cavity of the scull—*Vesalius* saw a girl at Augsburg of two years old, whose head in the space of seven months grew to an enormous size; near upon nine pints of water were found in the ventricles of the brain after her decease; he observes at the same time, that the scull was entirely membranous, with only so much of an osseous substance remaining as might be equal to the bulk of the girl's scull, before it grew to that wonderful bigness. No collection of water was to be found in any other part of the body, the cerebellum and the whole of the cerebrum and the nerves through every part of their originations were in a perfect natural state, and the girl preserved her senses to the very last moment

ment of her life. *Vesalius* who saw the girl a few days before her death, observed, that when those about her moved her head or held it up ever so little, a cough and a difficulty of breathing immediately succeeded; attended with a flushing of the face and a discharge of tears. *Tulpius* gives a case of a boy of five years old whom he saw in an hydrocephalus; whose scull contained five pints of water, which when drawn off; left such an appearance of emptiness in the cavity of the cranium, as that those who were present imagined the brains were wanting—it was plain however that the brain was there, but having lost its globular figure, it had assumed the shape of a convex arch; and the soft medullary substance was so distended by the great quantity of water, that it adhered closely on all sides like a very thick membrane to the arched surface of the softened bones—

the father of the child declared notwithstanding all this that the child retained all his senses.

*Petit* has observed that this disease happens after difficult cutting of the teeth in children, upon violent convulsions, or when they are much troubled with worms. In the beginning of the disorder, the lips and eyelids are slightly convulsed, they bite their lips, gnash their teeth, and rub their nose, sometimes they are costive, at other times they are loose; the eyes look languid, the pupils of which seem uncommonly dilated; they grow pale, weak, melancholy and languid. The principal symptoms to warn us of the approaching disease, are stupidity and sleepiness, evident signs that the brain is already loaded with aqueous serum collected in the head; as the disorder encreases, the bones of the head begin to recede from each other, the size of the

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the head enlarges, and leaves no farther room to doubt what the patient labors under. All these symptoms evince us that the functions of the brain are more and more impaired, which we cannot so easily judge of in very young infants, but when they are about a year old, we have plain and evident proofs to convince us of the presence of the disease. We have in the memoirs of the Royal Academy of Sciences an account of a boy who lived perfectly in health till he became two years and a half old, when he was attacked with this disorder; he began to falter in his speech, could learn nothing, his memory failed him, he became daily duller and duller, and at length quite stupid.—No water was found in the external parts of the head, though it had grown to an enormous size; nor between the meninges; but upon piercing into the brain, a large

collection of transparent lymph gushed forth, which had no bad smell at all. Besides the forementioned symptoms, and more especially the continual stupidity, I have sometimes observed, that persons afflicted with this disorder, cannot bear to hold their heads erect without crying out—yet as soon as they throw their head back supported by a pillow they are easy enough, but stupid. Under these circumstances I have ventured to prognosticate an accumulation of water in the ventricles of the brain, though the size of the head was not remarkably enlarged—and on opening the body, my conjecture has proved true.—I ever found the fluid collected in these cases to be limpid and clear, and by no means fetid.—

*Petit* in those who have died of this disease, observed the dura mater more than commonly adhering closely to the scull, the basis of the cranium quite flattened,

flattened, and as it were depressed, and the orbits of the eyes, and the eyes themselves thrust forward.—

When from the symptoms just now enumerated, I had reason to believe water was collected and lodged in the internal parts of the head, I directed the hair to be taken off, and recommended gentle friction, and this they bore very easily.— I ordered the head to be covered with a soft aromatic plaister, such as the *emplastrum e labdano* or *e meliloto* of the shops—this was renewed twice or thrice a day, in order that the head might be rubbed again.—I made them continue the friction till the parts, behind the ears especially, became red; for we frequently observe a quantity of matter oozing from thence and indeed from the skin which covers the whole head, this flux if imprudently checked, would greatly affect the brain and disturb all its functions—by this method I had

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hopes,

hopes, that the internal parts of the head might be relieved, by keeping up a due moisture upon its whole outward covering.

I tried this method on a female infant of nine months old, and was much pleased to find a considerable moisture about the right side of the *fontanella*\*, and that the skin of the whole head, and especially *that* behind the ears was afterwards constantly supplied with so much moisture as to oblige the nurse to change the child's caps very frequently, because they were so wet. I examined the head very carefully every day, and I found it did not enlarge, neither did the bones appear to recede from each other. I gave such gentle physic as I imagined best adapted to the tender age of my patient; but it

\* Is that membranous part found in infants newly born near to the coronal and sagittal future, which however becomes a thin bone in time.



was all in vain, for after the skin of the head had constantly for a fortnight together discharged its moisture, the stupidity encreased, and the child died after a few slight convulsive fits. I found six ounces and more of limpid water in the ventricles of the brain.—

*Petit* expresses much concern, that he never knew any patient who underwent the punctum in this disease to recover.

We sometimes observe a disease in new-born children analogous to this, and which is called the *spina bifida*, or double spine, because the vertebral spine seems as it were to open and recede from each other, and a soft tumor of a different magnitude grows there, containing at times a very limpid water, though at other times a fluid more thick and opaque; the integuments retain their color, though more frequently they are red or rather livid. *Ruysch*

says, “ if we examine this tumor carefully it will appear very evidently that it is a dropsy of a part of the spinal marrow, and is pretty nearly the same as that disorder of children which when seated in the head we call an hydrocephalus.”

This sort of tumor appears for the most part in the back or loins; sometimes, but that indeed seldom, in the nape of the neck; but very rarely in the lower and exterior part of the os sacrum; *Ruysch* expresses his surprize at it, because the lower part of the os sacrum even in a natural state separates at its back part.—But although the vertebræ for the most part recede only on the back part near the spinal processes, the body of the vertebræ itself remaining entire, yet he observed an aperture in one single vertebra just large enough to admit a small pea, he confesses however that none of the in-

fants

fants he ever visited escaped, and observes that death immediately ensued, if this swelling broke of itself, or was imprudently directed to be laid open.—*Tulpius* cautions much against it, and directs surgeons never to attempt it.

The lymph contained in the swelling of the spina bifida, descends perhaps from the ventricles of the brain, for we know, that the fourth ventricle of the brain is continued along the spinal marrow. We have an observation of *Wepfer* to confirm this opinion. A girl was born with a head well formed and proportioned, but on the back towards the right side of the superior vertebræ of the loins, there appeared a bright livid spot, about five inches in length and three in breadth, which daily encreased in its size, but not to be above the thickness of the finger at most, it grew so bright, as almost to shine like a looking-glass. Her right  
foot

foot was motionless from her very birth—ten days after which as the water visibly appeared through the skin, the surgeon made a very small incision, from which an absolutely limpid water issued forth, and the wound was soon closed, which the mother with her nails opened six times for some subsequent days, and discharged three ounces of water from it at each time, the surgeon soon healed up the wound, but as soon as it cicatrized, and the spot disappeared, first the right frontal bone, then the left, began to protuberate, and an hydrocephalus, with an immense encrease of the head, appeared in the space of about three or four weeks. It is evident this lymph issued from the ventricles of the brain, which being obstructed, nor the integuments capable of farther distention, the head began to fill from its accumulation and became universally dif-

distended by it. Hence it will appear, that since in a part so remote from the head, it is not safe to discharge the extravasated lymph, for by the consent of the most eminent men, death will in a few days follow after such an operation; how much more dangerous will it therefore be if we attempt to do it, where the internal parts of the scull are filled with a watery serum accumulated there?

The blood passes with the briskest circulation through the coronary arteries, the heart for this reason sends forth from its whole surface a larger quantity of a thin moist vapor, so that if it be immediately laid bare in a live animal, we find it reaking all over; wherefore after death, even after the body is cold, we observe a larger quantity of moisture in the cavity of the pericardium than in any other cavity

vity of proportionate size, by reason of this condensed vapor.

In healthy animals however, all the inward parts both containing and contained, are constantly found moist, but no fluid is observed to be collected in them, when they are dissected alive, or immediately after their death, the moist steam exhaling from the arteries, being reabsorbed by the veins — the smallest of these absorbed veins, being united to those next to them, exhibit large branches, visible even to the naked eye, in the thorax, and indeed on the surface of the containing as well as contained parts, till at length these lymphatic veins discharge themselves into the thoracic duct or in the sanguiferous veins. It is hence evident that there exist passages by which the thin lymph, expelled from the extremest exhaling arteries, may be conveyed into  
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the cavities of the body, and be again returned to the mass of the circulating fluids; and the accumulation or stagnation of them when collected be thus prevented. *Musgrave* injected four ounces of warm water into the right side of the thorax of a living dog; a difficulty of breathing ensued, and a manifest weakness; these complaints however went off by degrees, and in a week's time the dog was as well as ever. He afterwards injected in like manner sixteen ounces of warm water into the left cavity of the thorax of the same dog; the animal began to breathe with difficulty, grew very hot, and the heart beat very strong, but in a week's time the dog grew well again. He then injected into one side of the thorax eighteen ounces, and into the other only six, the same symptoms followed, but disappeared sooner, for the dog recovered in five days, he observed that  
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the creature made a greater quantity of water than usual.

Whatever occasions an obstruction of the speedy re-absorption of the exhaling moisture by the veins, may be the cause of a dropsy in the chest; this gives us to understand, why after a spasmodic asthma of long standing, a dropsy of the chest soon follows. In this kind of asthma certainly, the right ventricle of the heart is incapable of propelling the blood through the lungs, on account of the constriction occasioned by the spasm, the vena cava consequently cannot discharge itself, the veins therefore become all of them turgid, the lips of the miserable patient become livid and swell; neither can the lymphatic veins transmit the lymph which they have reabsorbed into the sanguiferous veins, which are already over-distended with blood; the arteries in the mean while continue to exhale



exhale their moisture, the lymph hence accumulates, or the tender lymphatic veins burst, and so perpetually distill the lymph into the cavity of the thorax.—These disorders are more especially to be feared, when the asthmatic paroxysms have been very severe, have frequently returned, and are chronic.

There is nothing perhaps which brings on this watery collection in the chest, sooner, than when a person too much overheated, suddenly drinks cold water, or remains long without exercise in the open and cold air—the sudden cold constricts the mouths of the vessels, and especially the absorbent venal, rather than the small exhaling arterial vessels; because the veins, *cæteris paribus*, have thinner coats than the arteries, as also because the motion of the fluids through the arteries towards their extremities keeps them  
open,

open, or opens them if they have suffered any degree of constriction; the motion of the fluids in the veins on the contrary acts not with such force on their extreme orifices, so that if they be constricted by the cold they close more easily, and collapse, and this happening to a great number of absorbent veins, will occasion an incurable dropsy, as the reabsorption cannot be restored.

The collected lymph may be lodged in five different parts of the thorax, in the right and left cavity of the breast, in the pericardium, behind, near the external part of the pleura next to the vertebræ, before, under the sternum between the two lamellæ of the pleura. We should diligently attend to these different seats of a dropsy, because they produce different symptoms, and require consequently different methods by which the collected lymph is to be drawn off — for if it  
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be lodged in either of the cavities of the breast, it may be removed by the paracentesis; if it be lodged in the pericardium, a puncture is to be made in it; if it be collected under the sternum, it requires a perforation there. If the water accumulates in that triangular cavity formed by the membranes of the pleura receding from each other near the vertebræ of the thorax, it will force itself a passage by its own weight through the cellular membrane, which covers the dorsal muscles, and fills up their interstices, in the same manner as pus when gathered there, and causes sinuous and wonderfully fistulous ulcers.

A dropsy of the breast is attended with many symptoms which resemble and are even the same as in an empyema. The fluid contained in the cavity of the breast, be it pus or a watery serum, will equally compress the

lungs, and obstruct their free motion—the pus when too long retained, contracts an acrid ichor, and will irritate the parts it is in contact with; and so will the lymph when it degenerates into a putrid colluvies. — *Albertini* by close observation and dissection of bodies dying of this disease assures us, that if the fluid stagnating in the thorax, be pure and limpid, it will not occasion such an oppression and difficulty of breathing; unless it fills both the cavities of the breast, or so distends either of them, as greatly to compress the other—but when the extravasated fluid is turbid, extremely yellow, or very acrid, in that case even a very small proportion of serum in the cavity of the breast will bring on a very difficult respiration.

If we attend to antecedent causes we shall then be able to distinguish properly in these disorders. If for instance  
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upon an inflammation of the breast symptoms of suppuration succeed, attended with a difficulty of breathing, we very naturally conclude that there is matter already formed. But if there be signs that tend towards a dropfical diathesis; such as a leucophlegmatic temperament; swelled face, feet, legs, thighs or scrotum, we may then pronounce it to be dropfical; and we may still be more strongly confirmed in our opinion, if there be a difficulty of breathing; and upon striking the body, we perceive a fluctuation or hear the noise of water in the breast. We know moreover that a dropsy of the breast frequently succeeds a convulsive asthma; we therefore have great reason to pronounce our opinion if such a disorder has preceded; whatever cavity of the breast the water be contained in, the patient cannot lie on the well side; if both the cavities are filled the patient

is most easy in an erect posture rather inclining forward.—An œdematous swelling of the feet not only generally attends this distemper, but it relieves the breast greatly as I have frequently observed, provided the swelling encreases in the lower extremities. If on the contrary the swelling of the legs suddenly subsides, the difficulty of breathing encreases greatly. *A difficult and quick breathing suddenly coming on towards bed-time, depriving the patient of rest, and gradually abating in the day-time, PISO esteemed a pathognomonic in this disease.*

Anatomical injections demonstrate the pericardium to abound with innumerable arteries, through which the thin attenuated blood returning from the lungs is pushed forward by the force of the neighbouring heart, the same thing happens to all the contents of the pericardium, there is at the same time

time a great heat in those parts, which dissolves the exhaling fluid into a very fine subtile vapor; in healthy animals therefore we find no collection of lymph, no stagnation, or corruption. By means of this moist, warm vapor continually exhaling, the pericardium is kept free from the heart, and concretion is prevented, and the whole surface of the heart, of both auricles, of the sinuses, arteries, and veins, remains moveable, capable of extension, moist, and fit to reabsorb the perspirable fluid; and the callosity and attrition of the parts is prevented by the great and perpetual motion of the heart. Certainly if the great causes of secretion exist here, we shall find the aptness for reabsorption not less, for the warm exhaling vapor acts with considerable force on the whole concave surface of the pericardium and the convex surface of the heart and both the au-

ricles ; the veins of the heart are entirely empty during its systole, and are therefore in the instant after bibulous and most fit to reabsorb whatever is excreted by the arteries. It is not true as it was formerly believed that the pericardium contained a fluid in its cavity in order to lubricate the heart and temperate its heat, for such a liquor is only found in the body when it is grown cold after death.—In living animals, suddenly dissected, we find only a thin exhaling vapor provided the subject be found and in health.

The pericardium has sometimes been found dropfical alone, sometimes it has accompanied a dropsy of the breast. But it is not so easy a matter to form a certain diagnostic, to judge whether there be a dropsy of the pericardium ; and this because, the disease agrees in many circumstances with a dropsy of  
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the breast, and with disorders of the lungs and heart, polypuses, &c. the symptoms therefore observed in the life-time of the patient cannot so easily be ascribed to a dropsy of the pericardium as they may be when death gives us an opportunity of examining the cause of the disorder. Besides it is certain, that in the beginning of the disease when the pericardium is but slightly distended, less troublesome symptoms arise, as when it becomes more and more turgid with collected lymph. A sensation of oppression and straitness about the anterior part of the thorax, which is the seat of the pericardium, seems most distinctly to point out this disease. It is evident at the same time, that the lungs which are nigh the pericardium, must be compressed whenever this happens to swell with water, respiration will be consequently much impeded,

and a dry troublesome cough will frequently return; and as the pericardium not only lies close upon the tendinous part of the diaphragm, but adheres firmly to it, in that part of it which is nearest to the inferior flat part of the heart, it is very probable that the pericardium when distended with water, will obstruct the motion of the diaphragm greatly, and so it will that of the heart, and occasion violent palpitation, an unequal pulse, syncope, and almost suffocation. By the unanimous consent of the best approved writers, it is universally allowed that it is a very difficult matter to distinguish a dropsy of the pericardium from one in the breast—*Senac* gives us one symptom, which he seems to think a very sure one, viz. *An undulatory motion perceivable between the third, fourth, and fifth ribs when the heart palpitates.*—

A drop-

A dropsy of the chest has its seat principally in three cavities, the pericardium, and the right and left cavity of the breast—the *paracentesis* does not remove the cause of this disease, but it frees the patient from the danger of immediate suffocation, and gives time to the physician to attack the disease by suitable medicines. It prolongs life by being frequently repeated and renders it more supportable, even when it is beyond the reach of art to remove the causes of this disease. It is not therefore right totally to condemn this operation in the thorax. For though *La Motte* and some others have positively asserted that all dropsies of the breast are mortal and entirely disapprove of the *paracentesis*—we find *Hippocrates* advises this method, and we may conclude from his expressions that some of his patients recovered—and it is very certain that, unless the water  
has

has remained so long as to corrode the viscera, &c. this operation has been performed by the ancient as well as modern physicians with good success.

*Hippocrates* describes this sort of dropsy and says that it happens chiefly when any person in hot weather, urged by vehement thirst, drinks plentifully of cold water, and the lungs are filled and discharge the water on the breast.—

Then comes on a dry cough, the fauces grow rough, then ensue rigors, fevers and orthopnœia, the body grows bulky, the feet swell; the symptoms he observes resemble those of an empyema, but less violent in degree, and of longer duration—he adds that in some patients, the belly, the scrotum, and the face are swelled, but says this only happens, *si tempus sectionis præterieris*, if you delay the puncture too long.—

We are however to observe that he never let out the water all at once but

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at different times—though this holds not at present, for we find the viscera may be so well sustained by a proper bandage, as to maintain an equable pressure, and so the water may be very safely drawn off—there is much more danger in doing it at several times, for the air may gain admittance into the cavity, and hasten the putrefaction of the extravasated fluid.

Less danger is to be apprehended when we draw off all the water at once in a dropsy of the chest, than in any other dropfical complaint, as the lungs are thereby freed from the load of the water which oppresses them, and are expanded by the air drawn in by respiration, and fill the whole cavity of the breast when thus emptied of the water; provided therefore the lungs be sound, the water may be safely enough drawn off.

Mr.

Mr. *Du Verney* gives us the history of a woman, who had a low and unequal pulse, and a great difficulty of breathing, and had an ascites as well as a dropsy of the breast—having first of all emptied the abdomen of the contained water by tapping, he some few days after performed the operation of the paracentesis in the breast between the second and third spurious rib, as near to the spine as it was possible; by this method he drew off the water with such good success, as enabled the patient to breathe with great ease and freedom, and in a month after to return to her usual employment. *Bianchi* also tells us of the same operation boldly and successfully performed upon a stout young man, in a recent dropsy of the breast—but he confesses at the same time, that he has not often chose to venture upon it.

Nor

Nor is *Bianchi* alone apprehensive in this matter—*Senac* complains that almost all physicians despair of persons unhappily labouring under a dropsy of the breast, though his own experience and observation convinced him how usefully the operation might be attempted. A person who had been cured of a pleurisy, still continued to be so oppressed in his breathing, that he was obliged to be kept in an erect posture, the disorder encreased upon him so much that there was great danger of suffocation—the thorax was punctured, and six pints of a yellow transparent water were drawn off; the discharge continued for some days, and in about a month's time he was so perfectly cured, as to be in a condition to attend the king at a hunting match on a swift horse. We should be very cautious how we positively foretell what fluid will come away upon piercing

piercing into the thorax, more especially if inflammatory disorders have preceded the dropsy of the breast.

A dropsy of the lungs themselves is a very surprising disorder, and not very easy to be discovered. This viscus it is well known consists of veins and arteries, and of air-vessels also. Watery serum cannot well be collected in veins and arteries, through which the fluids are continually propelled by the force of the neighbouring heart, nor in the air-vessels, because when once the humors begin to accumulate in them, a cough would immediately expel them, or if that did not succeed, the patient would no doubt be suffocated.—Anatomy demonstrates that these three kinds of vessels are joined by a sufficiently conspicuous cellular membrane, which admits of no fat—and in this membrane extravasated lymph may be collected, as well as in any other part  
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of the body, and produce a real dropsy of the lungs, especially when the thin vapors which the arteries perpetually exhale, are not again reabsorbed into the blood, by whatever cause this may be occasioned.—The lymph thus distending the cellular membrane may form tumors of various sizes, watery vomicae, and hydatides, and by compressing the adjacent vessels, and particularly the membranous extremities of the bronchia, disturb the action of the lungs in different manners. Neither will this appear wonderful, if we reflect that purulent vomicas are formed in this very cellular membrane.

*Albertini* formed his diagnostic of an œdema of the lungs where-ever he observed an œdematous swelling of the external parts attended with a difficulty of breathing in the very beginning, this is farther confirmed by the testimony of *Hippocrates*, who tells us  
that

that respiration will be more impeded by a small quantity of serum collected in the interstices of the lungs themselves, than by a greater, accumulated in the cavity of the breast. *Albertini* farther observes that the water is more easily drawn off from the lungs than it is from the cavity of the breast; he had seen many patients who from various causes suddenly swelled all over, more especially in the extreme parts, attended with a great difficulty of breathing, who nevertheless were recovered with ease by gentle hydragogues, diuretics, &c.—he concluded thence that their asthmatical symptoms certainly arose from a dropsy of the lungs. Doctor *Simpson* observes that he always suspected a dropsy of the lungs, if the face became turgid, or that the ankles swelled, and was attended with a difficulty of breathing, especially too if the pulse was so depressed

pressed as scarcely to be felt. He happily cured a woman, who seemed to be in great danger of instant suffocation, by giving her calomel. Certainly, if we consider that the veins of the lungs are most freely emptied during the diastole of the heart, and that there is a great heat and a brisk circulation there, of the fluids, we shall have great reason to expect a reabsorption of the extravasated humors, particularly if hydrogogues, &c. have been prudently administered at first—hence *Albertini* saw diuretics, purging and even bleeding of use in this case.—

*Maloet* relates a very remarkable case with respect to this disease. A soldier was very grievously afflicted with an asthma attended with a slow fever, he could neither lie on his back or either side without the greatest pain and uneasiness, and was therefore obliged to be kept in an erect posture—

his arms, hands, legs and feet were œdematous—hence this ingenious physician suspected a dropsy of the chest; but as upon the nicest examination, no fluctuation could be perceived, nor had the patient ever discovered any thing of it himself, and as no other symptoms which usually accompany this disorder appeared, the doctor gave up his opinion. The unhappy sufferer found little or no relief from the medicines directed for him, and after, lingering for two years, died. Upon opening his body, no extravasated serum was found in the cavity of the thorax, but a watery vomica in each lobe of the lungs, containing each about six ounces of clear transparent serum; and this was enclosed in a particular cyst, whose sides were of the thickness of a geometrical line, composed of different lamellæ lying one upon another, and in which there was  
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not the least appearance of either fibre, vessel, or gland; yet were they notwithstanding very capable of a longitudinal distention, and contraction by their own elastic power—but when they were roughly rubbed with the fingers, these membranes became a perfect mucus.—It is very judiciously observed at the same time, that the extravasated serum was not lodged in the bronchia, but in the cellular membrane which fills up the spaces between the greater and smaller lobes of the lungs.

This same writer seems to think that the lamellated membranes which form these bags, were not of an organical structure, but were formed from the contained fluid, as neither vessels nor fibres were visible in them. Very celebrated anatomists have been of the same way of thinking, and say that the substance of the cellular membrane is

not properly to be called vascular; at least that vessels have not as yet been discovered in this part; but numerous vessels are every-where disseminated all along this cellular coat, which envelops the vessels distributed over the viscera, and every-where accompanies them.

Tumors have frequently been observed in the conspicuous and anterior part of the aspera arteria, and those too of a considerable size; which, as they were imagined to arise from any violent strainings, loud crying, or the struggles of a woman in labor, were referred to herniæ or ruptures, called bronchoceles. As the thyroid gland which in men is about four inches long, at its anterior part lies close upon the segments of the aspera arteria, and is narrower there, but wider where it covers the sides of the thyroid cartilage, it is thought to be  
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the feat of these tumors. Mr. *Lalouette* was at great pains in examining the structure and use of this gland in human subjects as well as in brutes, and found the internal structure to consist of numberless, round, transparent corpuscles, which upon incision yielded a yellow fluid of a very viscid nature, which however soon disappeared; making a slight wound with the point of a lancet, he blew air into it with a pipe, upon which the thyroid gland swelled considerably, and he plainly saw these small round bodies swell and rise, but when he blew into the arteries or veins, these bodies did not swell. In a woman with child holding in her breath in violent labor pains, he observed the left side of the thyroid gland to swell considerably, which swelling upon opening the body was found to contain air only, with but a very few drops of a yellow fluid.

Whence it seems very probable, that the air, by the woman's violent efforts retained in the aspera arteria, found a passage into the substance of this gland. As therefore very large arteries run to this gland, and veins return from it, and since it consists of various, small, hollow, round corpuscles containing a fluid, it appears almost to a certainty, that some secretion is here intended, which, if (when collected in these follicles) it be prevented from carrying off, may gradually distend them and so produce very large swellings.

Such a watery tumor is very easily to be known, and if it has not been long left to itself may be easily cured by discussion, repeated frictions, and fomentations of camphorated spirits of wine, and hydragogue purges. A decoction of briony, with an addition of wine and sal ammoniac, or even the root itself beat up into a pulp, have  
been



been of great use. If these swellings are so large as not to yield to those methods they may be very safely laid open, and they will generally discharge a pellucid liquor, somewhat viscid, resembling the white of an egg.—There is, perhaps, scarce any part of the body, where such tumors may not happen.—if the follicle of a gland, or one or more cells of the membrana adiposa be distended with a watery serum. There is not a cavity of the body whether great or small which does not exhale and reabsorb some humor, if therefore from any cause whatever the exhalation continuing, reabsorption is impeded, such a watery swelling must necessarily be the consequence.

The ovaries of women very frequently swell into atheromatose, steatomatous and dropfical tumors, and have been found to contain very extraordinary concretions—such as stones, hairs;

teeth, bones, and often large hydatides enclosed in peculiar membranes, and those sometimes of a most surprising magnitude.

Doctor *Douglas* dissecting the body of a woman of twenty-seven years of age, who had died three days after her labor, found the whole ovary converted into a large hydatid, which filled the whole cavity of the abdomen, compressed all the abdominal viscera, and contained above seventy pints of a viscid dark-colored humour of pretty nearly the consistence of a syrup. In the sack itself, which contained this fluid, he found many small bladders of different dimensions, distinct from each other, resembling a mucilage of quince-seeds, and coagulating on the fire like the white of an egg. This tumor had grown so amazingly in three years time; and was originally owing to a violent blow received on the left side  
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of the abdomen, not long after the birth of her first child; in consequence of which she felt a great pain, which however went off in about three days—two months after she felt some slight pains in the hypogastric region on the left side, which began also to swell; the pains increased more and more till she grew with child; during her pregnancy she felt no unusual uneasiness, only that the abdomen was more swelled than usual, and the swelling scarcely subsided at all after delivery. In a year after she became pregnant again, about the middle of that time her legs began suddenly to swell, which when rubbed, discharged a considerable quantity of water, and so it did from the skin of the abdomen especially if any little pustules happened to be scratched.—A difficulty of breathing ensued, attended with a palpitation of the heart, nor could she sleep but  
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in an erect posture for fear of suffocation. She nevertheless brought forth a living child, but a great weakness, and difficulty of breathing coming on, she died three days after her delivery. But as each cavity of the thorax contained a large quantity of reddish water, and the pericardium was full of a greenish liquor, doctor *Douglas* was of opinion the cause of her death was owing to those circumstances; and that otherwise she might have lived many years, the other abdominal viscera being in a very sound state.

Such dropfical swellings sometimes grow to so large a size, as to fill up the whole cavity of the abdomen, and are then not easily distinguished from an ascites: but an incipient dropsy of the ovary may more readily be thrown from its situation in one or other side of the epigastric region, and from the circumscribed magnitude of the tumor.

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In the beginning also they perceive an obtuse pain and weight in the part affected.—Women labor under this complaint a long time, without any remarkable injury to their health; they conceive, bear children, and the abdominal viscera perform every function not being soaked in water as they are in an ascites; but suffer pressure only from the distention of the incumbent bag in which the tumor is contained. The urine is discharged freely and in sufficient quantity, which it does not do in an ascites. To these symptoms *Targioni*, a celebrated physician, reckons a swelling of the leg on the same side with the tumor, and a continual oozing of water through the pores of the skin, which he esteems almost a pathognomonic sign.

The cure is difficult, as the disorder lies often concealed—long before it can be properly distinguished and known,  
and

and not till the swelling is grown to an enormous size—and as the principal hope of curing a dropsy consists in the collected lymph's being reabsorbed by the veins, and the expulsion of it from the body by urine, stool, or sweat; it will be easy to conceive that this cannot so readily happen; since the enclosing membranes are so much dilated, and the veins, every-where dispersed through them, so entirely compressed by the distending water.—Nay sometimes a scirrhus accompanies this complaint, which will still add to the difficulty of the cure. A gelatinous substance is sometimes contained in this kind of tumor, which cannot so readily be discharged through the trochar; for which reason it has been necessary to dilate the wound, in order to give it a free passage; now putrefaction soon follows an accession of air, so that part  
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of the fluid passing into the abdomen corrupts, and will occasion death.

From the observations of doctor *Houstoun* as well as from other ingenious gentlemen of the faculty we find that dropsies of the ovaria are not absolutely incurable, especially where the disease has not got to a great height, and where there is no apprehension that the tumor adheres to the neighboring parts.—

It is certain however, that the paracentesis is equally safe here as in an ascites—life by this means may at least be prolonged for many years, and the patient greatly relieved, though a perfect recovery is not to be expected. Professor *Morand* affirms that he had several times performed this operation upon a woman of quality, who suffered so little from it, that she frequently went into the country the very next day after the operation, though in general

neral eighteen pints of water were taken from her at a time; neither did she die of this, but of some other disease.—

Dropsies of the womb frequently happen in consequence of miscarriage, and more especially if the placenta has been left behind, which will degenerate into a mass of hydatides.—*Ruyfch* and *Tulpius* give several cases in proof of this remark.

If more fat be secreted into the cellular membrane than can be reabsorbed by the veins, the body will be overloaded with fat: if the fat be melted down by violent motion, by heat, or by a fever, and be reabsorbed, a sudden emaciation will follow, as we frequently observe it to do after acute diseases, When therefore the watery colluvies abounds in the body, or that the aqueous particles are not sufficiently blended with the more balsamic particles.



ticles of the blood, the water will easily discharge itself into the cellular membrane, which, if it be not reabsorbed by the veins in equal proportion, will distend this cellular membrane, and occasion a general swelling of the whole body. Thus doctor *Hales* produced an artificial dropsy, by injecting warm water into the arteries of an animal through a tube of such an altitude, as that the pressure of the column of water should be nearly equal to the power with which the heart propels the blood through the vessels. But if the water be injected through the veins, the whole cellular membrane will swell dropfically, and that more easily than where the injection is attempted by the arteries—this dropsy is therefore called *anasarca*.

Frequently the feet only, or the legs and thighs swell by an anasarca, and indeed this disease generally begins by  
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attacking the lower parts, as the water collected in the cellular membrane tends downwards by its own weight, and swells the feet constantly towards night, the which by the equable heat of the bed, and the horizontal position of the body disappears, but returns again when the patient is up, and the lower limbs remain pendent during the course of the day, and more especially if the ascent of the venous blood which is not very easily performed, be not promoted by muscular motion.

When the blood is so broken down as to distend the parts under the skin with an aqueous humor, the disease is then an anasarca.

In a leucophlegmatia a mucous viscosity rather prevails, which being spread over the whole body, is more equally dispersed. But in an anasarca the watery tumor appears first in the extremities,

mities, and then ascends gradually. The description given by *Celsus* rather corresponds with an anasarca than a leucophlegmatia. And indeed it merits well our attention to distinguish these two diseases from each other, as they frequently require a very different method of cure. A leucophlegmatic girl is often cured by corroborants without the previous help of evacuations, which does not always succeed in a dropsy.—They are to be distinguished in the following manner; in a leucoplegmatia the whole body is soft, doughy and cold; in an anasarca the feet swell first, then the swelling ascends upwards, and the parts affected in this disease swell more than any other parts of the body; in a leucophlegmatia on the contrary every part is alike tumid, pale and relaxed. *Fernelius* reckoned this a pathognomonic symptom. *Hanc* (anasarcam)

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*sarcam) a plegmatica cachexia sejungit sola magnitudo, quod tumidiorem habeat corporis vitiatam molem.* Besides if the tumid parts in this sort of dropsy be pressed with the fingers they pit, and it recovers itself but slowly and gradually, for as the cells of the membrana adiposa communicate with each other, when a fluid is pressed out of some of them, it will pass into others, and when the pressure ceases it will return again into its former situation—but this cannot so easily happen in a leucophlegmatia, where the humor collected is tough and viscid, and it will therefore be more difficult for it to pass from one cell to another. This will also readily account for the swelling of the extremities, because the serum by its weight passes downward into the cells of the cellular membrane.—*Aretæus* perfectly knew this symptom of an anasarcaous dropsy, for he advises pressing the

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the part here and there with the finger; for then says he *αλλακην πη τον δακτυλον ερεισης, ο χωρος γιγνεται κοιλος ες χρονον τε πηλυν μιμνει κοιλος*—if you press with the finger it pits, and remains so for a considerable time. But this observation is not quite so accurate; as it only comprehends an anasarca when attended with an ascites, which is sometimes the case; but an ascites is frequently unattended with an anasarca, in that case the abdomen is tense, nor do the integuments give way to the pressure. An anasarca may occupy the whole habit, since the cellular membrane is spread all over the body; it is obvious how difficult the cure will be under such circumstances; the whole of the blood being dissolved into a watery colluvies; which it is not in the power of human art to remove.

A true anasarca even of the pia mater has been frequently known, the cellu-

lar substance lying between that and the dura mater, being greatly distended with water; upon the first view a viscid mucus seemed to cover the pia mater; but on making a puncture into the arachnoid membrane with a lancet, there issued forth a very large quantity of a thin watery fluid, and the whole tumor subsided.

That an anasarca may be productive of many and various evils, according to the places it affects, is very obvious—I have seen a dropsy swell the eyelids to so immense a degree as to render them incapable of separation. If it attack the scrotum, the penis will be most surprisingly inflated, and the tumid præpuce so strangely twisted as to obstruct the passage of the urine, and bring on a total suppression, so that scarification has been found absolutely necessary in order to let out the water contained in the cellular membrane of these

these parts. *Aretæus* mentions this symptom particularly.—

An anasarca however *cæteris paribus* is more easily cured, than other kinds of dropsy, because numerous large veins run through the cellular membrane, which may reabsorb the collected serum; besides the stagnating fluids may be put into motion by friction, and thus reabsorption be promoted; the collected lymph may also be discharged by scarification, blisters, caustics, &c.

It seems a matter of no great moment, with regard to the cure of this disease, whether the water be lodged between the duplicature of the peritonæum or between that and the aponeurosis — it will however be always necessary to know whether the water be contained in the cavity of the abdomen or not.—

Doctor *Mead* mentions three species of an ascites; the first, when water is

lodged in the cavity of the abdomen; the second, when the water is extravasated between the aponeurosis of the transverse muscles and the peritonæum; and the third, when the fluid falling between the coats of the peritonæum, distends them, and so forms a large receptacle for itself.

A dropsy may possibly have its seat between the duplicature of the peritonæum, though this very rarely happens; nor is it an easy matter to distinguish whether the water be lodged between the peritonæum and the aponeurosis of the abdominal muscles, or in the duplicature of the peritonæum, because the membranes are much injured by their soaking in the water; neither is there always sufficient time allowed to those who dissect the bodies of such as have died under this disease, to make an accurate observation and examine every particular.

*Lister*



*Lister* has described the symptoms of an ascites of the peritonæum from his observations upon a lady he attended, and who died of this dropsy. First, says he, the beginning of this disease is gradual, and its encrease slow—this is principally to be remarked in the first stages.—

Secondly, the belly does not swell equally alike all over, as when the water is lodged in the cavity of the abdomen; but the tumor is somewhat circumscribed, towards the anterior part of the belly especially; nor is its form much altered, by the different positions of the body; by this very circumstance, it is distinguishable from that species of dropfical swelling, occasioned by water collected in the cavity of the abdomen, for in that case, unless the abdomen be overstretched, the swelling gives way, as the patient moves from one side to the other. It

is also to be distinguished from a beginning tumor of the ovary, which occupies the lower lateral region of the abdomen, which is for the most part attended with an obtuse pain.

Thirdly, No fluctuation is perceived in some part of the abdomen, out of the limits of the tumor.

Fourthly, The lower extremities do not swell, at least not very perceptibly, and that also very leisurely.

Fifthly, The patients bear the disorder long, without any visible injury to the functions of the body; nor do they seem scarce to suffer any other inconvenience than what just arises from the size and weight of the tumor gradually encreasing.

When the water is lodged out of the cavity of the abdomen, the bowels are not injured by it, the patient therefore can support the disease longer, and in every other respect enjoy tolerable health;

health; and observations greatly to be relied upon, convince us that in these cases a good complexion, a tolerably free secretion of urine, a good appetite and digestion, and regular alvine excretions have remained for many years; from these appearances also, we may deduce diagnostics by which to distinguish this disease.

When the abdomen begins to fill with water, the swelling is first perceived about the flanks, and as the belly enlarges, there will necessarily ensue a greater pressure in the lower parts, and the iliac veins of course be compressed; and hence we observe the legs and thighs ofteneft to swell in an ascites—whereas if the water is collected between the muscles of the abdomen and the peritonæum, or in its duplicature, these veins are not affected, and therefore the extremities are little or not at all swelled; or if they be, it is after a  
long

long time, when the swelling in the abdomen is so much encreased as to compress the viscera.—

*Nuck* who very attentively examined the lymphatics, asserts that they may in a morbid state become hydatids.— *Proffessor Morand* who embraces the same opinion very ingeniously illustrates and confirms it, Hydatids most generally are found at their first origination, under the external coats of the viscera, now we likewise observe a vast number of lymphatics in this place.— The hydatids contain a lymph, similar to that which flows through the lymphatics; the lymphatic vessels through their whole length appear as it were knotty, while their cavity every-where is distinguished by two opposite valves, which are so constructed, as to admit an easy passage to the lymph flowing from a narrower to a broader part of those vessels, but obstructs its return  
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from a wider into a narrower part of them.—It is farther observable that the lymphatics are most contracted where they are nearest to a valve—the valves themselves, on the side towards the wider part of the lymphatic, are concave, and convex on the other side. If now from any cause, these tender lymphatics be compressed, or any obstruction happen in them, which may prevent a free discharge of the lymph into the larger veins, the intermediate *internodial* spaces will swell, the concave side of the valves will be distended by the incumbent fluid; the double valves lying close upon each other, being dilated by the pressure and plastic disposition of the lymph, may unite and adhere together, and thus, all that part of the lymphatic vessels, which lies between the double valves, will be distended into an hydatid, while the lymph perpetually is pressing from behind,

hind, before that the valves are become perfectly united together.——

*Bianchi* is not inclined to refer the original of those hydatids to a disease of the lymphatics, but rather to the membrane which envelopes the viscera, being distended and swelled at various distances by the extravasated ferous fluid.

It will always be absolutely necessary to a physician to be thoroughly acquainted whether the swelling of the abdomen be caused by the water floating in its cavity, or by an encysted dropsy—and this must be learnt from the attending symptoms—for the abdomen has been found greatly swelled, though no water has been found in its cavity, or in the duplicature of the peritonæum, or between that and the abdominal muscles, but the whole tumor proceeded from a rarefied vapor; which disease is generally known by  
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the name of *tympany*. And here again caution is requisite not to mistake this distemper for an ascites.

In a tympany the abdomen is never distended to so enormous a size as in an ascites; the abdomen towards its side is more flat and compressed, and more prominent before, an evident fluctuation is not perceived; on striking the belly, it sounds, but very hollow and dull like a wetted or unbraced drum.—Professor *Combalusier* defines a tympany thus, It is a bag-like tumor of the abdomen, shining, not sensibly heavy, constantly prominent upwards towards the navel, sounding when it is struck, and when pressed immediately rises again, generally attended with eructations, borborygms, and an obstinate constipation of the bowels arising from flatulency.—The skin of the abdomen is white, tense and elastic; that the form of the belly never alters  
upon

upon shifting the posture, and the pulse in general is harder and fuller than in an ascites, in which it is smaller and more languid—the belly when struck sounds like a drum, and the patient appearing light when weighed, are as it were in some measure pathognomonic—in an ascites the patients weigh heavy, because of the large quantity of water lodged in the cavity.

It was formerly a received notion, that a tympany proceeded from air lodged in the cavity of the abdomen; but, though this may sometimes be the case, yet we are taught by anatomical dissection, that this seldom happens, and that the cause is chiefly in the stomach and intestines when enormously distended by rarefied air lodged in their cavities. Professor *Littre* performed the operation of the paracentesis on the bodies of several persons who died of this distemper; the abdomen did not subside,



subside, nor did the flame of the candle, when applied to the orifice of the canula, seem to be disturbed, though the abdomen was pressed on all sides—he always found the stomach and intestines especially the large ones distended, inasmuch that the cæcum and colon were sometimes as big as a man's thigh—hence he rationally concluded that the tympany was not occasioned by air collected in the hollow part of the abdomen, but by the inflation of the stomach and intestines. This clears some passages of *Hippocrates* which before seemed somewhat obscure:—

“ *They who are afflicted with gripings*  
“ *and pains about the navel, and a pain*  
“ *of the loins, which are not removed by*  
“ *purges, or any other methods, generally*  
“ *fall into a dry dropsy.*” Now we

know the mesentery and mesocolon are connected with the loins; hence it is evident why a pain in the loins, not to

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be removed by medicine, may produce this disease.—

Professor *Littre* very clearly explains the manner in which the stomach and intestines may be so inflated with air, as to produce a tympany. The œsophagus freely admits the air, being always open at the upper end; besides this, it transmits air into the stomach along with the food; perhaps also, when the stomach itself is empty and suspended from both its orifices, the upper orifice of the stomach not being quite closed, may give a free passage to the air, which will therefore move pretty freely in the cavity of the stomach and bowels. Physiology informs us of what use the air is in digestion.— The air indeed is expanded by the inward heat of the body; but as the alimentary tube is muscular, and consists of very strong membranes, it resists its dilatation, and presses together  
the

the contents of its cavity. If the abdomen of a living animal be suddenly cut open, the intestines appear, solid, round, and scarce seem to have any cavity. In a dead body, the intestina tenuia appear very membranous, and to have a considerable cavity, because after death this muscular force, which resisted the distending air ceases—and as the intestines remain warm for some hours after death, they will be distended by the rarefied air, since they have lost their contractile muscular power.

Now *Littre* considered the rarefied air in the alimentary tube distending the bowels, and their contractile force, as two opposite powers. In health the contractile force of the intestines prevails, we cannot otherwise account, how six pints or more of medicated waters should be drank, and the whole be reabsorbed by the intestines, with-

out any discharge of it by stools. But if there be too great a quantity of air pent up in the alimentary tube, or that it be too much rarefied, it will then be expelled by the contractile power of the stomach and intestines, and so pass upwards by eructations, or downwards by flatus.—Hence the stomach which so often receives crude and flatulent food, and fermentative liquors, nay is frequently overcharged with them, expels the too copious or too rarefied air, generated by such meats and drinks, by the superior orifice of the œsophagus, with an eructation.—But in the intestina crassa, in which the greatest part of the injected food, deprived of all its nutritious juices, is collected, and mixed together with all the secreted humors of the body through the whole alimentary tube, there we shall find manifest tokens of putrefaction—  
hence

hence these parts are most frequently known to be the seat of flatulencies.

The intestina crassa are of a larger diameter than the tenuia, have stronger coats, and a triple ligament, which resists any immoderate distension, and considerably strengthens them through the whole length of their canal. And hence the rectum when irritated by rarefied air, resists its effort, and contracting itself, expels the flatus.—

And it is evident that the power with which it contracts itself is considerable, when we consider that flatus and even the fæces are sometimes forcibly and violently discharged, even against the efforts of strong and robust men.

If now, from any cause, the contractile force of the intestines should be weakened, they may yield to the expanding air, and so produce a tympany; for which reason we frequently observe this disease, when the solids

have been debilitated by long and tedious disorders, as also after frequent returns of the iliac passion.—Flatus and borborygms give hopes of cure in a tympany, because they are signs, that the intestines have not quite lost, or have recovered their tone.—

We read a remarkable case to this purpose, in the Medical Essays:—A girl twenty-two years old, after a tertian ague, which had been injudiciously treated, and had lasted seven months, took some doses of the cortex; after which she complained of acute pains in the loins and abdomen, which generally began near the right os ilii; thence they moved upwards and crossing the stomach transversely passed to the left side; they were attended with griping and borborygms, the abdomen swelled, and sometimes rose to an extraordinary bulk; then again, though no evacuations had preceded, subsided gradually,

gradually, though not entirely—the following winter she seemed free for some time of these complaints; but they returned in the beginning of the spring, the same symptoms appeared, and the abdomen swelled; and that to such a degree, that there were some apprehensions of its bursting; at last however the tumor again gradually grew less, without the intervention of any evacuation; at that time something like balls branching out in different places were perceivable upon touching the belly, especially on either side of the abdomen; her appetite was good, she had no thirst, and the urine was in proportionate quantity to what she drank. Purges were administered, and the fæces discharged, but scarce any flatus attended them, and little alteration was to be perceived in the swelling of the abdomen.—Various remedies both internal as well as external

were tried to very little effect; the belly still continued costive, and no flatus were discharged. At length she perceived rumblings and borborygms in her belly; some blood was discharged by the anus, (she had been subject formerly to an hæmorrhoidal flux) and at length she for two days successively broke wind both upwards and downwards so violently, that the patients in the same hospital could scarce bear the place—the abdomen grew less and softer to the touch; the explosion of flatus still held on, and though the swelling returned from time to time, she recovered so well by the use of corroborants, as to be able to go to hard work, and she continued in health afterwards, though she generally went bare-footed, laboured hard, and lived on very coarse food.—This surprising disease seems to have been a tympany, in which the colon was distended through



through its whole extent. The hard tumors proceeded no doubt from the dry hard fæces; for had they been scirrhi, so easy a cure would not have happened. When the distended fibres of the intestines had recovered their tone, the wind was forcibly expelled, the abdomen subsided, and the retained fæces were carried off by purges and clysters, and health was the consequence.

*Heister* declares an abdominal tympany to be a very rare case—and that though in the space of forty-six years, he had dissected many bodies of such as have died of a tympany, he never yet found any air in the cavity of the abdomen, but that it was always lodged in the distended intestines.

Air certainly exists in an incredible quantity in the solids and fluids of the body, but so long as the air remains involved, and coheres with the consti-

tuent parts of the body, divided as it were with the elements of these parts, it is not elastic; but when by encrease of heat, or by the intestine motion of fermentation and putrefaction, that nexus and cohesion of the air with our solids and fluids is broken, it then regains its usual elasticity, and becomes dilatable on the least encrease of heat—thus we see the bodies of drowned people, after having long lain in the water, emerge again, and float upon the surface. — When the air penetrates from the mortified intestines in the cavity of the abdomen it immediately swells, this is seen in those who are dying in a *passio iliaca*.

The intestinal tympany is easily to be distinguished from a tympany of the abdomen. — If after gripings of the belly and a pain in the loins, the abdomen be inflated, if there be frequent borborygms, and the belly be  
costive,

costive, we may suspect a tympany of the intestines: if these be wanting, and the inflated abdomen swells suddenly, we have room to imagine it an abdominal tympany, and in this case if you strike the belly the sound will be stronger; and this symptom will be of greater consequence, if such causes have preceded, as may give reason to suspect a putrefaction or a mortification of the bowels.

The dropsy of the testicles, may be divided into three species; a dropsy of the scrotum; a dropsy of the bag formed from the production of the peritonæum in a true hernia; a dropsy of the involucreum vaginale of the testicle—they are all called by one common name υδροκηλαι hydroceles.

The first is properly an anasarca of the scrotum, or a collection of water in the cellular membrane of this part.—It appears from the observations of that accurate anatomist *Winslow* that a  
confi-

considerable cellular membrane lies between the tunica vaginalis and the dartos muscle; the collected fluid therefore will be more likely to produce an anasarca in this part, as this cellular membrane has a communication with another similar membrane placed between the skin and the dartos muscle; this slender muscle will scarce appear between these distended cellular membranes, neither does the dartos muscle seem of so firm a texture, as to admit water to lodge itself between it and the tunica vaginalis, as in a hollow bag. The ingenious Mr. *Sharp's* observations on this subject well deserve to be read with attention.—That gentleman has excellently remarked, that an ascites alone will not fill the scrotum with water, and he appeals to all practitioners, whether they ever saw any persons in an ascites, who had an hydrocele at the same time, unless they

they had a rupture before. I confess that I have seen many persons in an ascites, and although the abdomen was greatly distended with water, I never found the water made itself a passage into the scrotum, unless a hernia had preceded.

We should be very careful how we distinguish other tumors from an hydrocele, and this is not difficult to do, if we are but careful and attentive: for inflammatory tumors of these parts are easily known by the heat, redness, pain and fevers accompanying them. Purulent and ichorous tumors are distinguished by inflammation or other causes which have preceded, and require a discharge of the collected humor as well as the hydrocele, lest the mischief may be encreased by delay. Sometimes also the testicle may be swelled from a bruise or any other cause, and becomes hard and rough and encreases  
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to a great size—this disease is called a farcocele; which however is very easily to be known from an hydrocele by the bare touch.—Sometimes when the testicle is thus disordered, an hydrocele may follow, which if it grow large, may hide the testicle, and evade the feeling—then the disorder is compound, and the history of the disease will shew, whether the swelling of the testicle preceded the hydrocele. This disease is then only known when it manifests itself by a swelling; for it cannot well be distinguished in the very beginning, while only a small quantity of a serous lymph is collected in the tunica vaginalis; for this tumor is not elastic nor yields to the pressure of the finger and rises again, as in an anasarca of the scrotum, because the fluid is not lodged in the cellular membrane but in the tunica vaginalis of the testicle. And this will be still more evident, if  
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the symptoms of the first and second species of the hydrocele are wanting. As the cavity of the tunica vaginalis is round, it will retain its figure when dilated; but as it becomes narrower towards the upper part, it may then, when it is sufficiently filled, be of an oval form.—Although it may so happen, that upon an encrease of the water, the upper part of it may be so dilated, as to retain its globular figure; but as the tunica vaginalis, and the integument of the scrotum when greatly distended, are rendered thinner by this distension, the bag in which the collected fluid is lodged, will be more transparent, especially if the scrotum be cautiously drawn up with a soft broad piece of linen, so as to encrease the tension. The water contained in such an hydrocele is most commonly clear and limpid, the whole of the tumors therefore will be transparent, and

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a candle being held on the opposite side, will give a fair opportunity of seeing the testicle lodged in the middle of the tumor, and so prevent its being injured in the operation of the paracentesis by the point of the trochar.—

*Celsus* knew this disease perfectly well, “the swelling (says he) is soft if there be not too much water; but if that encreases to a larger quantity, it resists the touch like a bladder quite filled up with water and tied down very hard—the veins of the scrotum are also much inflated, and if we press the part with the finger the humor gives way, and fluctuating raises that part which was not pressed upon, and it is visible through the scrotum, as if it were in a case of glass or horn, and is without pain in its own proper substance.”

It is to be observed however that the fluid collected in the tunica vaginalis is sometimes turbid and bloody; which



is usual in an hydrocele of long standing — great caution is here necessary how the operation is to be performed.——

We are taught by physiology, that all the lymph which returns from any part of the body whatever, passes from the lymphatic vessels into the sanguiferous veins, either directly, or indirectly through the cisterna lumbaris, ductus thoracicus, and so on to the subclavian.——If therefore a free passage be denied by any cause to the lymph through any of the larger vessels, it will stagnate and distend its own vessels, and the smallest absorbent veins will not be able to disengage themselves of their contents; wherefore reabsorption of the exhaling vessels will be impeded, while the exhalation from the arteries will at the same time be continued into the same cavities, and a dropsy be the consequence. *Lower* has plainly proved  
this

this by evident experiments made upon living animals. Having perforated into the chest of a large mastiff dog, he tied the vena cava, then stitched up the wound; the animal grew immediately faint, and died in a very few hours after. On dissecting the dog, a large quantity of serum was found floating in his abdomen, just as if he had long labored under an ascites. He made a very tight ligature upon the jugular veins of another dog; some few hours after, all the parts above the ligature swelled amazingly, and in two days the dog perished just as if he had been suffocated by an angina; he found all the muscles and glands above the ligature greatly distended with a limpid and transparent serum. Here we see an ascites produced in a few hours, from the venous blood being obstructed in its motion. In the body of a girl of eight years old, who died lethargic,  
and

and greatly oppressed in her breathing; from a collection of water in the ventricles of the brain; the cavity of the breast was found full of a watery serum somewhat tinged with blood, but a perfectly clear and limpid fluid was observed in the brain; *Lamotte*, who had opened the child, upon freeing the breast from the contained humor, found the lungs entirely sound, but discovered two abscesses, and two hard fleshy tumors as big as a pigeon's egg, which compressed the descending trunk of the vena cava; which were indisputably the occasion of this accumulation of watery serum in the head and breast.

In the beginning of a dropsy the feet swell first, because the blood returns with great difficulty from the extremities upwards, especially in those who live a sedentary life, and seldom or ever use much exercise—hence tall men are

supposed to be more subject to this disorder than those of lower stature—for in tall men the blood has a long way to ascend against the resisting effort of gravitation, and therefore *cæteris paribus*, their feet will more easily swell. Professor *Sauvage* has very well remarked that the fluids in a healthy state have a certain degree of viscosity, by which they adhere to the sides of the vessels, and by this means the power of gravity is lessened, when they are to ascend almost perpendicularly. If now such a cachexy happens, as that no more good blood can be produced, and the fluids degenerate into a watery thinness, this adhesion to the sides of the vessel is much lessened, the power of gravity continuing the same notwithstanding; the extremities will therefore very easily swell.—

Hence we may also learn why a dropsy is to be feared, if any obstruction

struction happens near the right venous sinus, in the pulmonary artery, or in the lungs themselves, so as to prevent the free passage of the blood through that viscus; for in that case the two trunks of the vena cava cannot discharge their contents freely, whence the motion of the venous blood will be greatly retarded. Thus we frequently see persons afflicted with polypous concretions about the heart and the larger vessels become and die dropfical; for the same reason asthmatical people are subject to the like bad consequences: This *Aretæus* has taken notice of, and so does *Aetius*——: the ancients imagined that dropfies were occasioned by diseases of the liver, and indeed it is not to be wondered that they thought so, since this viscus is found so frequently impaired in subjects who have died dropfical. The ascending trunk of the vena cava passes

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through

through the liver, and the vena portarum is distributed through the whole substance of it, any tumor therefore in that viscus may obstruct a free return to the venous blood; but once the obstruction is removed, and that the blood moves freely through the veins, the extravasated fluid may be reabsorbed, and so be carried off by the proper channels.—Thus *Hippocrates* says, “a dropsy is cured when the water passes through the veins into the belly.”

If the free circulation of the venous blood be obstructed, the lymphatics remain distended, if this distention be increased they may burst, and discharge their contained fluid into the cavities of the body.—Many authors, indeed, have denied that this is a cause of the dropsy, others think it is very seldom if ever the cause of this distemper.

What-

Whatever weakens the tone of the vessels disposes the body to a dropsy—for whenever the strength of the vessels is weakened they will act less powerfully upon the contained fluids, and be incapable of converting the chyle into a good and firm-textured blood—the blood consequently loses of its red color, and as this part is the most dense of all, the whole mass of humors will degenerate and become much attenuated and impoverished, and a cachexy will ensue: and if these too greatly attenuated fluids fly off, the body will consume in consequence of a marasmus; if they remain in the body, they will be accumulated in the cavities, and so bring on a leucophlegmatia and a dropsy.

Drinking large draughts of cold water when a person is overtired and heated is no unfrequent cause of a dropsy, especially if after it he lies down to repose himself without being

well covered and defended from the air; for in that case no sweat follows, the urine is discharged in small quantities, and all the water remains mixed with the blood.—Now it is evident from Mr. Hale's experiments, that a large quantity of water being suddenly thrown in upon the blood does not pass from the arteries into the veins, but is deposited by the smaller secretory ramifications in the cavities of the body, and soon brings on a universal dropsy. The same happens to those unfortunate people, who lie down immediately after having swilled down large draughts of cold water—for if they continued to move about briskly, the muscles acting powerfully and continually, would prevent the water from collecting in the cellular membrane, which every-where covers the muscles, and fills up their intermediate spaces: besides as the body grows warm by exercise and motion,  
the



the water that is drank is kept moving on, and passes off either by urine or sweat or by both; and if it oppresses the stomach is discharged by vomit or stool. *Aetius* and *Aretæus* expressly mention this in their description of the causes of a dropsy.

The texture of the omentum is so contrived as to be entirely fitted for the reabsorbing the lymph, and to mix it so reabsorbed by means of the two epiploic veins with the blood of the vena portarum before it passes into the liver——if therefore the omentum be impaired or in a state of disease, this reabsorption will be impeded, and bring on a dropsy.——

A difficulty of breathing is very certainly a bad symptom in a dropsy——because it either happens in consequence of too great a fulness of the abdomen, or it argues some reason to suspect water to be lodged in the breast or

lungs.—A cough here is also for the same reasons accounted an ugly symptom.—

When the watery serum is collected in the cavities of the body, it returns not by the veins, neither does it again mix with the blood.—The blood consequently will be daily more and more deprived of its most fluid parts, and be rendered less capable of circulating freely through the vessels. Hence, the secretion of the finer juices will be diminished, and the patient becomes dry and thirsty, and the tongue and palate almost parched up with heat, and while the belly only swells to an enormous size, the rest of the body becomes emaciated with a marasmus. Neither will copious drinking diminish the thirst, because the liquids drank will not easily unite with the already too-much exsiccated blood, but soon escape from the vessels into the dilated  
cavities

cavities of the body, the skin no longer perspires, and the urine is discharged in very small quantity; thus the liquor taken inwardly remains there and encreases the dropfical complaint, but does not stay in the vessels through which the fluids circulate:

*Quo plus sunt potæ, plus sitiuntur, aquæ.*

Large draughts of liquids but encrease the fire,

The more they drink, the more they still desire.

The collected lymph, by long stagnation, becomes salt and brackish, more and more acrid, and almost alcalious. Besides, dropfical persons are most generally costive, the excrements therefore by long retention in the *primæ viæ* become putrid.—

Dropfical

Dropfical patients are commonly heavy and drowfy; for they are overwhelmed with the mafs of water, their strength is much impaired, and they are fcarce able to move or bear their unwieldy body. Befides as plenty of good animal fpirits cannot be fecreted in the brain from the blood, which is fo much vitiated, we fhall have another reason why the body feels fo heavy in this difeafe; and why the patient becomes inactive and indolent—fometimes water is found in the ventricles of the brain, and the patient dies lethargic.—

When the abdomen is diftended by a prodigious quantity of water, the intefines muft neceffarily be compressed, and the fæces be accumulated in the *inteftina crassa*; they will become hard, and confequently be excreted with difficulty. Moreover we may confider that the vifcera in this cafe, which

which are destined to secrete the chyle, are scirrhus and loaded with obstinate obstructions; now all these viscera bear a part in forming good bile, whose function it is to promote the alvine excretions—if the bile therefore be deficient in quantity, or if from the ill state of the viscera it wants its due qualities, it is easy to conceive that it will produce costiveness.—This is excellently well described by *Hippocrates* in his *coacæ prænotiones*.

Dropfical persons upon this account frequently require a double or triple dose of cathartic medicines in order to procure stools.

Although in the beginning of a dropsy, the whole body feels cold and is languid, and that it appears to be a disease entirely contrary to a fever, yet we observe a fever frequently accompanies the disease if it be of long standing;

standing ; partly from the tendency to a putrefaction in the stagnating fluids, and partly because the blood being deprived of its diluting lymph, escaping from its proper vessels, is collected in the cavities of the body. “ *Fere in totum plurimi ex hydropicis febriunt.*” Almost all dropfical persons, says *Aetius*, are feverish.”

That the fluids may pass through the extremities of the small arterial vessels of the skin, it is necessary that the skin should be soft and naturally warm ; now in dropfical people, the swelled legs and thighs are as cold as marble, while the parts not immediately affected by the dropfical swelling, are quite thin and emaciated. We entertain very favorable hopes, if in dropfical patients we can obtain sweat either spontaneously or by art, because it is a sign that the extravasated serum is reabsorbed and circulates through  
the

the vessels, and is exhaled by the pores of the skin from the body. Unless that which is wasted both in the fluids and solids by the very actions of the body in health can be restored again by good and wholesome nourishment, a true marasmus must necessarily ensue—the very best of food requires the action of all the viscera and vessels, as well as a large plenty of pre-existing sound juices in the body, so that what is wasted may be repaired. Now the whole blood in a dropsy is depraved, and the viscera so compressed by the water, that they cannot perform their functions, and the more distended and turgid the dropfical parts are, the more defective will nutrition be in the parts which are not swelled.

It is well known that our fluids have a tendency to putrefaction; but so long as they circulate freely through the vessels, and that the corruptible particles

ticles are excreted from the body, putrefaction will be prevented.——But when once they begin to stagnate long in the cavities of the body, putrefaction is to be much feared, which will however be the longer before it begins, provided they are close and shut up, but will soon happen when once free access be given to the air. It is perhaps for this reason that drawing away the water by degrees, has so often been attended with bad success; for the air getting admission, much more readily accelerates putrefaction.——We often observe water taken away by tapping, shews no sign of putridity; but when long exposed to the open air, has smelt abominably. However though water will grow putrid in any cavity of the body, yet it will more readily happen in an ascites than in other dropsies, for from the newly opened abdomen of an healthy person, we see a vapor reeking forth



forth of the smell of urine, with a disagreeable stench; the abdominal viscera are perpetually agitated by the motion of respiration; the bile which approaches nearest to putrefaction of all the fluids, transfuses in such a manner, as to tinge all the parts near to the gall-bladder with yellow, as it has been frequently observed in dissection of dead bodies, the fœces retained long in the intestina crassa exhale a putrid steam.—All these concurring causes make the waters putrefy sooner, which when it once happens, will consume the viscera perpetually soaking in such a corrupted fluid, into a putrid colluvies—whence, it has been always esteemed a bad omen, if in tapping the water comes out putrid, or so to affect the fingers, and soften the skin as alkaline lees are apt to do.—

Bleeding at the nose is a dangerous symptom, as it diminishes the quantity

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tity of blood, already too small.—

We should be cautious in the use of cordials not too suddenly or all at once to encrease the circulation, for the dropsy grows too fast in its own nature, and the abdomen swells more and more in an ascites, while the arteries continue to discharge the ferous lymph, and the veins do not at the same time reabsorb it—if therefore the motion of the fluids be too violently or too instantaneously accelerated, and this more particularly, when they are too much attenuated, they might all be discharged into the cavities of the dilated abdomen, and all the vessels of the whole body would entirely collapse, an event which would be of the most fatal consequence. *Trallian* observes, “*nam calefacientia nimium si universa ac una vice assumuntur, totum potius habitum colliquant, quam abundantem humorem evacuent.*”

Besides,

Besides, when such juices as have hitherto been stagnating are too suddenly put into motion, such a sudden fulness might ensue, and the lungs be so oppressed, as to endanger suffocation. Thus we see when a person laboring with an anasarcaous dropsy, attempts to move suddenly, he will have such an oppression on his breast, as to be scarce able to breathe, especially if he goes up hill. For this reason a sensible prudent physician endeavors to set the stagnating fluids into motion not all at once, but gradually, with an intent that the extravasated serum being reabsorbed and mixed with the blood, may be expelled by sweat, or by an increased discharge of urine, for unless this end can be obtained, we can expect no cure.—

Friction is of great use in an anasarca, where the collected water stagnates in the adipose membrane, for it

acts more immediately on the extravasated serum, when the skin only intervenes, than if the abdomen was to be strongly rubbed in an ascites. Simple oil of olives has been known to have had salutary effects even in an ascites, which was cured by rubbing it night and morning for a month together—however I am rather inclined to believe the success was rather owing to the friction than to any particular inherent virtue in the oil.—Friction is by no means advisable if the belly be very much tumefied, or that the integuments be thin and over-stretched, or the breathing laborious—but when the swelling abates, the skin is less distended, and better able to bear stronger and rougher friction.

The ancient physicians very prudently began by very gentle friction, that suffocation and an oppression of the lungs might be prevented, from  
the

the extravasated serum being too suddenly re-mixed with the blood.

*Hoffman* observed that an œdema of the feet repelled, produced a great oppression and stricture upon the breast. Nay he saw some patients who were seized with an ague, and that as soon as the cold fit began, and the swelling of the feet disappeared, they were suddenly attacked with a violent oppression and difficulty of breathing, and a sudden suffocation always happened in the third fit, as soon as the rigor began.

Exercise accelerates the motion of the venous blood towards the heart, and the circulation of the fluids may be encreased at will; in all times therefore it has been strongly recommended as good in the cure of dropsies. *Hippocrates* advises, *labores, fotum, & temperantiam*, labor, fomentation, and temperance, *ταλαιπωρις*, that is hard and laborious fatiguing work; and he

says the patient should persist in it, and even attempt climbing up steep hills, but lest the lungs should be oppressed by violent and sudden motion, he adds this caution: “but if he breathes with difficulty, and the season be sultry warm, the patient in the prime and vigor of life, and his strength will bear it, let blood be first of all taken from his arm.”

If a dropsy happens in consequence of copious hæmorrhages or of drinking large draughts of water, and that there is no reason to suspect any of the viscera to be obstructed, or that there is a viscid cachochymia, we have no need of using attenuating medicines, but rather to use our best endeavors to discharge the water from the body, and that done, to restore and brace it with corroborants. It is much safer to draw off the water in an ascites by tapping, than by strong vomits and purges.

It

It is not easy to determine what number of tappings an ascitical patient may bear and receive relief from, before he sinks under the incurable disorder of the corrupted viscera.—A Swiss soldier bore the operation fifty-seven times in the space of twenty-one months: doctor *Mead* gives us the case of a lady who was tapped oftener. When I lived at *Great Yarmouth* in *Norfolk* I attended one *Mrs. Masters*, and was present at her being tapped thirty times, the whole quantity of water taken from her amounted to *one hundred and fifty gallons*.—It is very certain that a large quantity of water floats even in the warm summer air, though we imagine it driest; for fixed alkaline salts grow presently moist in this air, and encrease in weight as soon as they are cold; neither is it a small quantity of water which these salts attract to themselves from the air—it is

very probable to believe that dropfical bodies attract the water from the air, especially since no other cause can be assigned, why persons in an ascites, after they have been freed from all the water by tapping, should fill so soon again, although they drink little or nothing, and eat the driest food, and though the urine they discharge is more in quantity than the liquor they take.—

Vomits are of use sometimes, by which the excretion of urine is often increased, when the extravasated serum begins to be reabsorbed in consequence of the frequent concussions occasioned by vomiting; and this fluid afterwards issues from the body by various outlets, if the cure goes on successfully.

A dropsy if recent, when the viscera are found and uninjured, the subject young and robust, and always healthy before,



before, is easily cured—even sometimes with two or three drastic purges.

A liquid form is preferable for purges, because the primæ viæ are frequently entirely dry, so that pills and other more solid substances can scarcely be dissolved, and therefore become less active in their operation.

A weakness of the solids, of the viscera, and of the vessels is a cause of a dropsy.—*Sydenham* observes that this disorder encreases more in winter than in summer, and more in rainy than in clear weather.--He advises the use of steel medicines, not only to corroborate the body after the water is discharged, but in the beginning of the disease, “when it has swelled the feet only, or but very little swelled the belly.”

A dry diet should be directed in this disease, of biscuit, or well baked and well leavened bread, roast flesh of

young animals, river fish broiled; the drink should be strong but sparing; *good old port* is astringent and of service, and that the flaccid intestines and the stomach may be moderately stimulated, some acrid seasonings may be mixed with the food, such as mustard, horse-radish, pepper, &c. having however regard to the season of the year, and the age and constitution of the patient recovered of the dropsy.

Water rendered extremely cold by ice or snow has frequently been recommended by physicians to be externally applied to the abdomen in a tympany, and to be drank also, and this with good success—certainly such a sudden cold contracts the solids, and at the same time checks the expansion of the flatulent matter, and so is useful in both respects. Cold water therefore in this case acts as a corroborant, but as soon as the abdomen begins to subside,

side, it should be supported by rollers, that the stomach and intestines may not so easily dilate again, but be able to resist the rarefied air which moves up and down their cavities.

We know that the peristaltick motion of the intestines is much encreased and forwarded by the stimulating power of purges, so that the fæces are much sooner expelled; wherefore physicians prescribe purges; and those of the most drastic kind, such as the *wild cucumber*, *common fleur de luce*, *Scottish scurvy-grass*, together with carminatives and aromatics. But as the whole intestinal tube is not always distended in this disease, but is often here and there only contracted, many have advised gentle purges, and those given in small doses joined with carminatives, in order to prevent a costiveness — for we have reason to suspect an encrease of the contraction in the already obstructed

structed bowels, from violent purges; and carminatives without some easy purge, rather do harm.

*Hoffman* discommends strong purges—and says they should be gentle and mixed with anodynes, and directs the body to be well rubbed with camphire dissolved in oil of almonds, at the same time.

We must endeavor to diminish as much as possible the rarefaction of the air contained in the cavities of the stomach and intestines. Air is swallowed down with our food, and is either separated from it in the time of digestion, imperceptible before because it was not elastic; or what is still much worse, it putrefies.—The great doctor *Hales* has demonstrated that air is naturally inherent in all bodies, and that it visibly constitutes a considerable part of their bulk; and that the self-same air is again separated from them whenever

ever

ever their mutual connections are destroyed or lessened by fire, fermentation, putrefaction, effervescence, or any other causes. He has farther proved that the air separated from bodies, becomes elastic; and when combined again with them, loses its elasticity: he moreover observes that aqueous vapors diminish elasticity, whether they arise from pure water, or exhale from the bodies of animals; whence the elasticity of the imbibed air in respiration is lessened.—Now if we consider, that the food is dissolved in the time of digestion, that some tend to fermentation, others to putrefaction; a separation of air from the food must necessarily be supposed to ensue, which if not reabsorbed, and deprived by that means of its elasticity by the warm vapors exhaling from the extreme arteries into the cavities of the stomach and bowels, will distend these viscera,  
and

and this by so much the more, by how much the viscera are less sound and firm, and thus they will be less able to resist the expansion of the air. In healthy constitutions, during the time of digestion much more air seems to be generated than reabsorbed; it is for this reason that men seem swelled and bloated after a hearty meal; but in weak habits we observe frequent flatulencies, especially if they have eat and drank of such things as contain a great deal of air, and are easily separated from them, or are quickly subject to putrefy and ferment. Hence it evidently follows that such patients should avoid crude summer fruits, turneps, radishes, &c.

*Hales* remarks that the vapor of brimstone most powerfully absorbs the air, or considerably diminishes its elasticity—and an accidental practical case demonstrates that *spiritus sulphuris per campanam,*

*campanam*, which is the condensed steam of burnt sulphur, is useful in this disorder.

*Francis Oswald Grembsius* had in vain tried to cure this distemper by hydragogue purges; he afterwards directed a fomentation of the boy's urine and lapis prunella, but without any hope of doing service.—The patient afterwards desired he might have something ordered to allay his great thirst.—The physician had some of the spirit. sulph. per camp. at hand, of which he directed him to take some drops in a glass of water.—This not only took off the thirst, but it brought forth prodigious flatulencies, the abdomen subsided, and the patient was perfectly restored. It is well known how efficacious the steams of sulphur are to prevent fermentation, or to stop it when it is once begun.—Fermentation generates a great plenty of elastic air.

A true

A true emphysematous swelling of the intestines is not easily cured, for the remedies taken inwardly, though they may pass through the cavities of the intestines, can exert but very little of their force on the emphysema.

After the scrotum has been opened, either by incision or by caustic, it is universally agreed that a slight inflammation and suppuration must be encouraged, in order that the depurated sides of the bag may so cohere to each other and to the adjacent parts, that the whole cavity may be entirely destroyed. *Celsus* directs the membrane, which contains the humor, to be cut away.

*Bertrandi* and the very ingenious Mr. *Sharp* observe, that an inflammation excited in the *tunica vaginalis*, is very frequently attended with fevers of dangerous consequence, with deliria, spasms of the abdomen, and other  
bad



bad and ugly symptoms.—Nay Mr. *Sharp*, though his patients in general got the better of the fever, confesses freely that this fever is more terrible and alarming, than that which usually follows upon the extirpation of the testicle—hence he condemns the cruel method of trying to tear off the *tunica vaginalis*, after the scrotum has been laid open—for the sole hope we have of a successful and radical cure in this case, is, to encourage a mild suppuration, and therefore gentle irritation is absolutely necessary.

## Of the GOUT.

THE gout and arthritis are two very distinct and different disorders; for though the gout when inveterate may seize on several of the joints at one and the same time, yet in its first stage, it always first attacks the feet.—Besides, *the arthritis generally begins with a fever*, but *the gout without any previous symptom*, attacks the joints.—Its first attacks are seldom lasting, in which it differs from arthritic pains which are of long duration—insomuch that if they happen in the autumn, they seldom leave the miserable sufferer before the spring—if therefore a person be seized with an unexpected pain in the foot or feet, without any manifest cause, which goes off again in a very few days of itself, or in consequence of some gentle remedies,

medies, we may reasonably suspect it to be the gout; and this the more especially if they have periodical returns in the autumn and spring—*Podagrici affectus vere & autumno plerumque moventur*, says *Hippocrates*. We are here to take particular notice that *Hippocrates* does not say that the disease is produced, but seems to hint how the morbifick matter, which lay as it were hid and gradually accumulating, is moved, and disposed to charge its whole fury on the joints.

It very rarely attacks boys before the age of puberty—nor did it ever appear by any authenticated observations, that a true genuine gout ever afflicted the human race epidemically.—

Stidious people are subject to the gout, because they use little or no exercise; by which means digestion is much obstructed, which is an immediate cause of this distemper.

As the powers of concoction are greatly weakened by too frequent copulation, too excessive venery is very pernicious and productive of the gout.

Λυσιμελὺς Βακχὺς καὶ λυσιμελὺς Ἀφροδίτης  
Γεννᾶται θύγατρ' λυσιμελὸς ποδαγρᾶ.

From *Love* and *Wine* Health's chiefest  
foes,

The joint-relaxing *Gout* arose.

The gout is less severe in summer than in winter. *Sydenham* has very accurately described the symptoms of this disorder—the fit, says he, for the most part comes on suddenly, now and then the patient, for some weeks before, complains of a crudity, and indigestion, and a certain uneasy weight in his stomach; his body is as it were puffed up, which daily encreases till the fit comes on——immediately preceding which, he perceives a kind of torpor,  
and

and a wind passing downward through the fleshy parts of the thigh, attended with spasm—the day before, the appetite is voracious and unnatural.—

It has been frequently observed by gouty persons who have eaten too large a quantity of *asparagus*, that it has hastened a paroxysm.

*Sydenham* declares purgatives to be hardly ever of any service in the gout.

If we attentively consider with how much difficulty the fluids pass through such parts as are generally first attacked by this disease, we shall be able to form some tolerable and probable reasons why the gout first begins in the feet, which suffer greatly, especially about the heels, as they are obliged to sustain the whole weight of the body—and being at a distance from the heart, that spring of circulatory motion, are frequently subject to cold and moisture; and the blood conveyed thither by the

arteries, must return by the veins, though they have the efforts of gravitation to overcome. — All these things well considered plainly prove how easy it is for matter to collect and lodge itself there; besides the ligaments and tendons which are numerous in these parts, are, as we know from anatomical injections, very impervious, and we are therefore not to be surpris'd that a free circulation of the humors should be prevented.—Moreover the feet are liable to receive injuries in walking, jumping, or from sudden falls, &c. these accidents, as *Ægineta* has well observed, very often bring on a fit of the gout.

The gout is naturally directed to the joints, but when the morbid matter is either too redundant, or can find no farther admission into its usual channels, it may then affect every or any part of the body——.

It very often gives no previous notice of a visit, but people seemingly go to bed in good health and are awakened by it in the middle of the night and *somno excussi exclamant subito*, says *Lucian* whose description of the gout is most elegantly and justly depicted, and is well worth the reading—the pain according to *Sydenham* is like the forcing of the bones asunder, attended with a feeling as if water not quite cold was pouring on the membranes of the parts affected, then a rigor with a shivering succeeds, accompanied with some degree of heat.

A gentle moisture upon the surface of the skin, and particularly upon the affected part, usually relieves the patient—for then the swelling begins, and the pain considerably abates.

The severest of all gout is that in which we can observe neither swelling or discoloration of the part, be-

cause it is probable that the morbid matter is locked up and retained in the finer vessels.

The morbid matter is sooner or later expelled, in proportion to the quantity accumulated, and to the degree of strength in the patient to throw it off—in strong robust people, and those who are seldom attacked, the fit is over in fourteen days—but in aged people and those who have had frequent paroxysms it will continue for two months—in those who are much farther advanced in years or more broken down by the length and severity of the disease, it will not leave them till the summer is advanced.—

Nor is it certain when a confirmed gout will terminate—for the inclemency of the air, errors committed in diet or in the non-naturals, may all contribute to prolong the paroxysm.

*Sydenham*



*Sydenham* and *Mead* were of opinion, that the gouty matter collected in great abundance about the joint, when the fibres and more subtile parts were dissipated, hardened into *chalky* concretions.

*Hoffman* took this chalky matter to be a tartareous concretion, and endeavors to support his opinion, for these reasons principally; persons laboring under the gout were often troubled with the stone at the same time; and that this chalky matter appeared evidently to be of the same nature with tartareous salt, compounded of an acid and a good deal of earth, and that drinking too much of wines, in which this tartar abounds, contributed most generally to produce this distemper.

*Haller* with very great industry applied himself to examine in what manner the bones were first formed in young animals at the time of incubation.

bation. He observes, that the whole body, and of consequence the bones themselves were in a soft jelly-like state while the animal was forming—this jelly first becomes cartilaginous, and then osseous.—The conversion from a jelly into a cartilage is quick and easy, for it requires but a small degree of solidity, but it is less accountable and more difficult for the cartilage to become ossified. A cartilage, when not very thick, is pellucid, the first signs of its assuming a bony nature are opacity and a yellowish color, and it is of a very fibrous contexture: this change is perceivable on the eighth day of incubation, on the tenth, the first rudiments of the blood are to be seen, distinguishable by a yellowish cast, on the eleventh we observe the redness, and on the same day, that part of the cartilage which began to be opaque and yellow on the eighth, looks

looks now of a reddish color, for the arteries now being dilated, are able to transmit some red particles of blood, and a bony concretion is easily discernible in some parts of the cartilage, such as may be observed in callus's of fractured bones, before they acquire their former solidity and hardness. The arteries now gradually enlarging, press upon the adjacent parts, and harden them, as they become more and more dilated, and are more fitted to give a passage to the grosser parts, those especially of an earthy nature, by the interposition of which a greater degree of solidity and brittleness is given to the cartilage, and of consequence lessens its flexibility, thus from being a flexile elastick substance, it becomes entirely hard and bony. If this earth be mixed with the acid of vinegar, it becomes a neutral salt full of shining crystals, which can soften the  
bones

bones and so resolve them again into their former cartilaginous state. Gouty concretions consist entirely of this earthy part—this it is which deprives the ligaments of their flexibility, and deprives all the parts of their use and motion, and deforms the joints in so extraordinary a manner, as we see in gouty people—the gout is very properly therefore stiled περιχονδυλοπωροφιλα, delighting to stiffen the joints.—The emperor *Galba* it is said was so miserably mauled with the gout, that he could not make use of hands or feet—and cried out, “*Cum esse oportet, manus non habeo; oportet progredi, non sunt mihi pedes, oportet dolere, tum & pedes mihi sunt & manus.*” When I would eat I have no hands; if I am inclined to walk, my feet fail me; but when I am to be tormented, then both hands and feet are ready.—

There

There is great reason to believe that the proximate cause of the gout consists in a vitiated disposition of the most minute, and of consequence, of the nervous vessels in the body, and even in a depraved state of that exceeding fine subtile fluid which circulates or moistens them.—

The most painful gout, of all others, is most certainly where no swelling or inflammation appears upon the part affected, and even where there is little or a very small degree of fever attending.

*Costa* has observed, that the urine before a fit of the gout for several days together is very pale and muddy, something resembling thick lemonade, and the longer these symptoms continue before an attack of the distemper, so much severer he apprehended would be the approaching paroxysm; all which plainly proves the existence of  
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an acrimony in the humors not sufficiently discharged by the urinary passages.—

*Sydenham* declares it to be his opinion that the gout owes its origin to an *apepsia* or injured concoction of the particular parts, as well as of the whole mass of humors in the body—the gout in general, we see, attacks the rich, who live splendid and luxuriously.—We have known some of these to have been cured, when by any unfortunate accidents they have been reduced, and therefore obliged to have recourse to work for their maintenance; labor and bodily exercise will either subdue, or expel, any noxious humors, happening in consequence of an imperfect assimilation of the food, from the body.—A ploughman with eager appetite devours the coarsest bread and bacon, which would very little agree with the stomach of one who  
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leads a studious and sedentary life.—  
*Sydenham* therefore recommends a diet consisting of soft, well-boiled simple food, and farther advises gouty people to eat at dinner only, and never to touch suppers—he moreover strongly enforces exercise, especially *walking though it be attended with some degree of pain*. Now if we well consider these things so much insisted upon, we shall find them to be such as are chiefly calculated to restore and promote the languid action of the chylopoietic viscera, in order to forward a perfect assimilation; for if any thing faulty remain in the first concoction, it is hardly to be amended in the others; nay even though the liquids, which flow through the larger vessels, may be unimpaired, yet there may be something not altogether agreeable to nature, remaining in the very subtile and fine fluids that are separated from the blood,  
and

and more in the exceeding tender vessels, which being accumulated and rendered still worse by stagnation, may occasion many, and various surprising diseases.

*Reaumur* has evidently demonstrated that the vital rudiments of a living animal may remain unchanged for many years, and forbear to give the least sign of encrease, yet when occasion serves, is afterwards capable in all respects of producing another animal according to its own likeness. In the vegetable kingdom, the rudiments of a future plant, contained in a ripe seed, may be kept in that state almost for any number of years, even to fourscore.—Nay *Baillou* gave some feeds and beans to a gardener, which had been kept above *two hundred years*, which being planted grew to maturity and proved the fine kidney bean. Many things of this kind even occur in  
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the human body, which plainly prove many certain latent principles remain a long time in it, without receiving any additional encrease, till after some years they at once make their appearance. The hairs are from the very beginning planted in the skin that covers the *pubis*, and yet they only appear at the time of puberty, and then indeed they grow very fast, &c.—It will not therefore appear so absurd, that the unhappy seeds of the gout and other distempers should be so intimately conjoined to the first rudiments of the embryo, as not to shew themselves by any tokens for many years, and at length, at some period of life, awaken into action, and produce a disease alike in every respect to that which originally afflicted the parent.—

*Cognoscat unusquisque, me solam deum  
Non delinire, pharmacis, non obsequi.*

My

My power mankind shall own, and pray  
 in vain,  
 Nor find one kindly drug to ease their  
 pain.

*Luc. Tragopod.*

So that we are not to expect a radical cure for this disease—whatever the ignorant and empyrical tribe may pretend. Temperance, care, and sobriety may keep it under.——

Bleeding, unless under the most violent symptoms, of a delirium, fever, difficulty of breathing, &c. is by no means adviseable, lest it remove the morbidick matter, and drive it towards the viscera.——If there are signs of filthy unwholesome matter collected in the primæ viæ, to purge it off by gentle evacuation may not be hurtful; but it does not by any means appear eligible to disturb the body with sharp irritating medicines, in expectation of  
 carrying

carrying off the gouty matter by stools, more especially when deposited upon the joints, or near being deposited; for in that case we have reason to fear, that the matter may be driven inwardly, whence the worst consequences may happen — during the paroxysm, the work of nature seems to be more requisite than the attempts of art, and therefore diluent drink, or an emollient gentle clyster, seems to be well calculated to assist nature, but to provoke these evacuations during the fit by any sharp stimulants, is most undoubtedly prejudicial.——

Diaphoretics are less hazardous than purgatives or emetics.——

*Sydenham* observes, that to evacuate the peccant matter by *sweat*, is less hazardous than when it is attempted either by *purges* or *vomits*.——But he much condemns such sweats as are excited by hot stimulating medicines, es-

pecially during the time of the fit, for fear they might drive the morbifick matter too forcibly into the articulations, and so occasion intolerable and most excruciating pains.—

Neither *Sydenham* nor *Mead* were advocates for purgatives in the cure of the gout, they rather imagined they aggravated the disease by repelling it upon the joints—where-ever there appeared the least tendency of the gout falling inwardly upon any vital part, *Mead* recommends the warmer purgatives but not the stronger ones in order to remove the disease from those parts.

It is a very necessary precaution when physicians attend persons who are subject to the gout that are suddenly attacked with any other disorder to have a particular regard to this disease; and to irritate the parts which have been formerly affected, by friction, fomentation,

mentation, blisters, and every other method to fix the wandering gouty matter on the extremities—and this is more particularly necessary when the gouty person has not had a fit for a considerable time, and has committed some error in his way of living: *Totis viribus* (says Mead) *contendendum est, ut ignea colluvies ista in partem quam prius occupaverat revertatur.*

The morbid matter of the gout is no doubt very easily to be moved; but it would be attended with the greatest danger, and very little advantage to the patient; for it will be repelled upon the viscera, whence it can seldom be recalled again to the joints, and even if it can, it is attended with much severer pains than before—the consequences of repelling this disorder, is too obvious to the wary and experienced practitioner. “*Ego vero affirmo*

(says Trallian) *ne adstringentibus quidem, & repellentibus, in affectis partibus utendum esse, nisi totum prius corpus a recrementis liberaveris. Nam quod articulis influit, ne, ad partes principales recurrens, suffocationis causa fiat ægro, periculumque mortis adferat, metuendum est, sive igitur discutientibus, sive repellentibus uti velis, totum corpus vacuare properato.*" I do positively affirm, that neither astringents, no, nor repellents should be applied to the parts affected, until the whole body be discharged of recrements; for there is room to fear, that what should be deposited on the joints, may be driven back towards some noble and vital parts, and so endanger suffocation and sudden death— if you are determined to make use of such sort of methods, be careful first of all to clear the body of these recrements — by recrements he must certainly

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tainly mean the gouty matter — the great *Sydenham* frequently admonishes us to be extremely cautious how we use such medicines in the cure of this distemper.——

*Sydenham* though he in general advises a moderation in the diet of gouty people, yet does he condemn too great an abstinence—and even allows flesh meats, for though, says he, a thin diet be best, yet as some people cannot bear such a total abstinence but become languid, nay are subject to faint, I would under such circumstances allow flesh, taking care however, that they do not transgress either in quantity or quality, for although their strength is to be supported, yet must not the body be overloaded with too great a quantity of food.——

The great difficulty attending the cure of the gout (according to *Sy-*  
R 3 *denham*)

*denham*) arose from the natural opposition of the medicines, for such as were of service in assisting digestion, did harm by their heating qualities, in rendering the morbifick matter more active and outrageous; and on the other hand, those which cooled and blunted the acrimony of the humors, were manifestly injurious, because they weakened the viscera.

Doctor *Mead* warns old people in particular, and those who have had many fits of the gout, against attempting a strict diet upon milk and greens; for he had observed, *his, si non omnino invadit morbus, pro articulis præcordia infestentur, crurumque insuper robore destituti, vitam sæpe in reliquum miseram transigant*; in such, if the gout kept entirely off, in place of the joints the parts about the præcordia were sure to be infected, besides they lost all the use  
of



of their limbs, and remained miserable for the rest of their lives; if at all, he recommends such a regimen to young persons, or to such as have had but very few fits, or where the disease is hereditary; and even then does he recommend a strict diet of milk only—but advises once a day flesh-meat, and fresh-water fish.—

*Sydenham* though very free in the use of opiates in many diseases, was very sparing of them in the gout, and gives this prudent admonition, *Si igitur dolor admodum sæviat, æger rectius sibi consulat, se in lecto continendo, donec is aliquantisper remiserit, quam si anodynis utatur: attamen haud abs re fuerit, laudani paucillum vesperi sumere, si dolor patientiam multum vincat: aliter melius omittetur;* should the pain be excessively severe, the patient till it is somewhat abated, had better keep in his bed, than take

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any thing by way of an anodyne—but should his pain get the better of his patience, he may then take a small dose of laudanum in the evening—he would however do better, could he let it alone.—

*Sydenham* when the pains suddenly left the joints, and that this was succeeded by a great sickness and oppression, attended with vomiting and gripes, immediately swallowed down some *pints of small beer* or other weak liquor, and as soon as all this came away by vomit, took *eighteen drops of laudanum*, in a little Canary wine, went to bed and composed himself to rest: he assures us that by this method, he has frequently recovered himself from the most imminent danger.—

Persons very far advanced in years are not so severely or regularly attacked with the gout, as those who are in the vigor of life.

Bitter

Bitter medicines which have a grateful aromatic stimulus are of great use, for by them the viscera are irritated into a brisker motion, and if the bile has lost any proper degree of acrimony, the bitterness of the remedy will correct that inconvenience; whence all bitters, that are not purgative, have in all cases been esteemed stomachic;—they restore strength and vigor to the viscera. *Sydenham* held such medicines in the highest estimation, *quæ miti calore atque amaritudine ventriculorum corroborant, & sanguinis massam vegetiorem reddunt ac magis vitalem.* To these bitter and strengthening medicines he used to recommend antiscorbutics, such as horse-radish, scurvy-grass, water-creffes, &c.—he farther recommended the cort. Peruvianus a few grains to be taken night and morning. These sort of remedies however

however are best suited to those who are advanced in years, but these or the *Portland* powders should never be given to those who are of a bilious habit. Where the patient is troubled with acid vomitings *Hoffman* says great relief may be expected from absorbent earths and lixivial salts, he therefore recommends the *Caroline Baths* to gouty people, as they contain a considerable quantity of alkaline salts.

Bodily exercise such as riding on horseback, in a carriage, nay walking even though the patient is in a little pain, is of infinite use—and so are frictions morning and evening about the feet—by which means the parts are strengthened and any morbid matter collected, dissipated and melted down. *Ætius* much recommends them, *non quidem tempore inflammationis, et doloribus instantibus, sed cum hæc remittunt.*

External

External applications are best let alone, they seldom prove of any use— it has even been observed that the joints stiffen sooner for the most part, when they have been too much pestered with fomentations, ointments, plaisters, &c.

How happily the waters of BATH, both internally as well as externally used, have contributed to the relief of the *gout*, is strongly confirmed by the testimony of many ages.

*Diseases incident to Virgins.*

**I**T has been constantly observed that those who have been irregular in the course of their catamenia, have never been so fruitful, and have been always liable to frequent miscarriages.

*Columbus* was of opinion that the menstrual blood came not from the vessels of the womb itself, but from those *quæ in uteri cervicem ad ejus latera inseruntur*. — But we have demonstrative proofs that the menstrual flux proceeds from the uterus itself; this is confirmed by *Mauriceau*, *Littre*, and *Morgagni*.

The membrane which covers the bottom of the uterus, as *Winslow* remarks, is perforated by a great many small foramina, to be seen even with  
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the naked eye, from which upon a slight pressure of the uterus, the blood is easily forced out; this same membrane is of a villous texture, resembling velvet; this villous surface together with the foramina are more or less tinged with blood in women who have died during the time of the menstrual discharge; water and injections of colored wax when thrown into the arteries, pass out of their extremities into the cavity of the uterus — All these things considered, we may naturally conclude the internal cavity, and particularly the bottom of the uterus to be the true seat from which the menstrual discharges originally issue forth. However, as the whole pudendum and vagina in women constantly discharge a fine, soft, watery, serous liquor from the extremities of these very little strait arteries which open into them; and as they are provided  
with

with blood-vessels similar to that of the uterus itself, it doth not seem at all improbable, but that even blood may issue out of the dilated extremities of these vessels—and in women with child, who during their pregnancy have these discharges in smaller quantities, it is perhaps from these vessels of the vagina, that the blood comes away without any ill convenience in consequence of it; for if it proceeded from the cavity of the uterus, a miscarriage would most probably follow.—

The menstrual flux seems ordained by nature to happen at a certain time of life, not only to relieve the body of a superfluous quantity of blood, but so to dispose the uterus as to render it fit for conception.—But whether women in countries where they seldom or ever menstruate, do notwithstanding continue prolific, is a question which  
will



will admit of a doubt.—Writers of travels frequently relate things upon credit, and often have neither an opportunity or inclination to examine narrowly into matters of this kind. *Linnæus* observes that the women in Lapland menstruate in very small quantities, and says at the same time, that those who never had this discharge, were always barren.

Physicians from the very structure of the female body imagined there was a sufficient reason to account why this superfluous blood should rather be discharged by the uterus, than by any other part of the body—if the bony construction of the *pelvis* be considered, we shall find it remarkably different from what it is in man, and much more capacious.—The vertebræ of the loins recede farther back from each other, the distance between the *os sacrum* and *os ileum* is greater, so is that

that between the *ilia*: the *os coccygis* is straiter and more flexible than it is in a man, which is bent a little more forward; the bones of the *pubis* join each other at obtuser angles—besides the protuberances of the bones of the *ischium* recede much more from each other—whence the necks of the *femora* are more transversely placed, and form less acute angles with the *acetabula*; all these reasons considered we find the pelvis must necessarily be larger in women than in men, in order that during the time of pregnancy the turgid and distended abdomen may be more firmly supported.

The *uterus*, which is entirely vascular, is situated in this large *pelvis*, between the bladder and the *rectum*, almost loose, and under a very little pressure; for in the time of pregnancy the whole bottom of the uterus ascends towards the abdomen, and in a

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*prolapsus uteri* often descends so low, as to be protruded without the lips of the pudendum; besides, the *uterus* may slide forwards, backwards, and sideway in difficult labors. Now, though the uterus feels apparently firm and solid to the touch in young girls, and in maidens fully grown, yet the effects of pregnancy shew that the vessels may easily yield, and dilate to a surprising degree, since the *uterus*, towards the close of pregnancy, appears like a sponge filled with blood, while the vessels, scarcely discernible before conception, are so enlarged, as sometimes to admit the tip of the little finger. The *uterus* moreover receives a great number of arteries from the spermatics, hypogastrics, hemorrhoidal, and external iliacs. It is farther supplied with a like distribution of veins derived from the same origin, all destitute of valves, and communicating

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with each other; which is the case likewise with the uterine arteries, whence a free circulation of a larger quantity of blood is carried on without the least impediment. The interior cavity of the *uterus* is at the same time pierced by these very minute apertures, which discharge a thin, aqueo-mucose moisture, in order to lubricate and soften the internal substance of the *uterus*, and to prevent the sides of the cavity from adhering to each other.

All these things which regard the situation, vascular fabric, and ready expansion of the *uterus*, being clearly understood, it is next to be considered that women sooner arrive to their utmost growth than men, and yet their viscera extract from the aliments the same quantity of nutritive humors as before, which however do not serve the purposes of accretion as before; and since it is observed that women perspire less than

than men, it must follow that a quantity of wholesome humors will be accumulated in the vessels, and a plethora ensue, useful indeed, where a woman becoming pregnant, has not only her own body, but that of the child's to nourish and support, but injurious, when that is not the case, when allowed to be daily increasing, without any salutary provision made or outlet given to carry it off. Such a superfluity is therefore necessary, in order that a woman may always be in a condition to conceive and nourish the fœtus; and it is as necessary that there should be such outlets to carry off the redundancy when a woman is not under such a situation. Seeing then that the uterus is wholly vascular, loosely situated, and easily dilatible, and that it has a cavity adapted to receive the superfluous humors, till they are afterwards expelled by the *os uteri*; hence the ves-

fels of the uterus being gradually enlarged by the increased quantity of found humors, become so much dilated, as that their extreme orifices, which at first discharged a dewy moisture only, gradually encreasing in their diameters, send forth even the red part of the blood into the cavity of the uterus, and so the menstrual flux follows of course; the erect posture of the body also greatly assists its secretion and excretion——.

But when the *plethora* is once lessened by this bloody discharge from the *uterus*, the vessels being no longer distended, contract themselves by their own power into lesser diameters; and then they no longer admit the red blood to pass, but the very thin humors only; and thus the minute extremities of the vessels which open into the cavity of the *uterus*, return to their former dimensions, till the *plethora* returning in  
confe-

consequence of the same causes, dilates them again, at the same interval of time.

Those who would deduce the cause of the menstrual flux from a plethora arising, for instance in a girl's body when arrived at its full growth, do not seem to have considered how frequently it happens that girls grow remarkably taller and bigger after having had several regular periods of the menstrual discharge. The encrease or growth of the human body has by many been observed, not always to proceed in so regular and gradual a manner, as has been commonly imagined. That the human body the nearer it is to its origin, has a very quick tendency to grow, the fœtus sufficiently demonstrates, which from a very small speck grows in nine months time to so remarkable a size. We frequently ob-

serve in the progress of life a very great difference with regard to the degrees and quickness of growing. Towards puberty we frequently remark a sudden alteration, in others it happens sometimes later, so that in a very few months, the body grows more in size and stature, than it had done for two years together before. It is well known, that young people, when seized with feverish disorders especially of the acute sort, if they escape, grow taller as they recover; because the humors from the force of the fever are impelled through the vessels, which by that means become stretched out and dilated, whilst the bones too, not having as yet acquired their full hardness, easily yield to the same impressions; but the disorder ceasing, the cause of this sudden growth will cease also, and yet I have seen some persons grow surprizingly



prizingly more after their recovery, than during the continuance of the disease.

Doctor *Simpson*, to prove that the menstrual flux does not arise from a plethora, observes, that doctor *Friend* supposes a *plethora* to be gradually and daily accumulated, between each menstrual period, particularly confiding on what *Sanctorius* has asserted, that the bodies of men encreased in weight one or two pounds every month. Now doctor *Keil* in his tables has demonstrated just the contrary.—Besides, if the menstrual discharge depended upon the gradual accumulation of a *plethora*, the periods would necessarily be retarded, whenever the quantity of humor was lessened by any evacuation, or whenever this accumulation was prevented by inanition or abstinence.—Now doctor *Simpson* boldly appeals to the testimony of all physi-

cians, the least conversant with practice, whether they ever saw a stoppage of the monthly periods by bleeding during the intermediate interval?— It has even frequently accelerated them—*etiam vulgo compertum esse, says Hoffman, secta ante tempus menstruorum vena liberiores eorum fluxum fieri.*

In consequence of these difficulties, doctor *Simpson* denies a *plethora* to be the cause of the menstrual discharge; but proposes another; for he was of opinion that the body did not cease to grow because the parts becoming more strong, too powerfully resisted any farther extension or elongation, but because the extending and elongating power was diminished for as long as there is a greater resistance in the flexible vessels, the fluids impelled through these vessels by the force of the heart, will distend and lengthen them the more, and on the other hand, the more  
freely

freely they pass through these vessels, the less will be their extension and elongation. He therefore imagines, the body to have arrived at its *ακμῆ* or full growth, when all the vessels are most free, pervious, and open, so as to give an easy passage to the fluids impelled; whence he concludes, the growth does not cease, because the parts cannot yield, but because the force and efficacy of the distending powers are lessened, or greatly impaired.

He supports his opinion by observing that if in an adult any obstacle arises to the free circulation of the humors from an obstruction in any of the viscera, these viscera will immediately be immensely enlarged, as many medical observations have demonstrated it in the liver, spleen, kidneys, &c. Thus in steatomatous swellings the more the matter secreted from the blood is accumulated

cumulated in the follicle, the more it presses upon the neighbouring vessels; these vessels in their turn encrease in bulk the more they are distended by the impulse of the blood thus impeded in its free circulation.

From these considerations, therefore, he concludes, that the menstrual flux itself is the reason, why the *uterus* comes to its own full growth, and then ceases to grow; for when once the blood is discharged into the cavity of the *uterus* from the mouths of the vessels, or into the sinuses first filled in the substance of the womb, the circulation of the humors by the uterine vessels will be very free, the distending and elongating power will consequently cease.—But when the *chorion* and *placenta* closely adhering to the internal surface of the womb, in its time of impregnation obstruct the free passage of the blood, the womb again encreases  
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in its bulk, and becomes of a remarkable size.

Again; he maintains the gradual encrease of the uterus to be the cause of the menstrual irruption; for there always is a secretion of a thin liquid within the cavity of the womb to keep it moistened, and prevent the concretion of its sides. Now these minute exhaling vessels are very small, and at length dilate more and more as the womb becomes enlarged; and so at last transmit the red globules of blood—then it is that the *menses* begin to flow, and which may very well happen without a plethora of the whole body. But as the blood has now a free passage through these dilated orifices, the resistance to the blood propelled through the uterine vessels is taken off, the dilating cause will cease of course, they contract themselves by their own proper effort, till at length, allowing no  
more

more red blood to pass, they only secrete the very fine fluids as formerly, and thus the menstrual flux ceases spontaneously. By the same way of reasoning he explains why the *menstrua* in strong robust women, give over sooner; because the texture of their vessels being firmer, while the dilating power is weaker, the vessels will be much sooner and more powerfully contracted—whilst women of a soft and delicate texture, have frequent and copious discharges.—

It must be acknowledged that medicine owes much to mathematical and physical reasoning in general, by which the common properties of bodies are explained, and provided the *data* are true, the theory built upon them will prove so beyond contradiction. The laws of hydraulics may be applied to the human body; it consists of canals, and liquids moving through them, as  
also

also sinuses, receptacles, &c.—And yet all the phænomena are not to be explained by hydraulics. Our canals have a living principle in them; they are indeed dilated by the liquids impelled by the force of the heart, and by their own elasticity return again to their former diameters, our vessels are nevertheless acted upon by other causes besides these, that can neither be understood nor explained by hydraulics. Many ingenious men have endeavoured to determine the proportion the trunks of the vessels bear to the branches, and the branches to each other, and the diversity of angles by which the different branches go off from the particular trunks, &c. But these are not sufficient to give us a clear idea of every particular to be observed in our bodies; by a change of thought alone our canals become in a moment changed, so that they shall either quickly dilate, or

as suddenly become contracted. A person in perfect health suddenly struck with terror, turns pale immediately—An immodest expression hastily thrown out before a bashful girl, will throw a vermilion all over her face, neck and shoulders.—These and many other similar reasons, incline me to think that all the things which happen in the human body cannot by any means be explained by the general principles of bodies, though we be ever so well acquainted with the particular structure of the parts—it is by observation only that we know they are so, though how or in what manner they became so, is a matter not so easily understood, if indeed understood at all.

The body, about the time it comes to be fit for generation, undergoes several alterations, insomuch that physicians entirely trust to the age of puberty for the hopes of curing several  
of



of the most obstinate distempers, which they could not effect by the power of the most approved medicines, this we particularly observe in epilepsies, &c. Comparative anatomy will teach us how surprizingly the genital organs alter in animals when the season of generating approaches, and they swell with venereal rage.

*Menstruis copiosioribus profluentibus morbi oboriuntur; at non prodeuntibus accidunt ab utero morbi,* says *Hippocrates: Galen*, in his comment upon this aphorism, very justly observes that *Hippocrates* presaged all the disorders of the body from the copious discharges of the *menses*, because from too great a loss of blood, the body necessarily became cachectic; but when the *menstrua* did not come away, then the *uterus* became liable to disorders, either because the vessels were too rigid, or that the blood was too largely accumulated

in the substance of the *uterus*, or from both causes concurring together; and hence says, we are to expect inflammatory, scirrhus, erysipelalous and carcinomatous affections—these disorders we frequently see happen at that time of life when the menstrual flux begins to leave the sex, especially those who formerly have had it in a free and copious manner, and that it has stopped too suddenly.

Difference of climate, habit of body, and various ways of living occasion a great diversity in the menstrual discharges—the women in *Lapland* menstruate but little; in hot countries the *menses* come away in great abundance; in a lax habit of the body, these discharges are always more copious, in women of a firm and robust constitution the quantity is small—those who live at their ease, and fare sumptuous and luxuriously, menstruate in large quantities;

quantities; while the country peasant, hardened by daily labor and fatigue, discharges scarce any thing, and yet enjoys good health.

*Hippocrates* in speaking of the quantity discharged during the time of menstruation says, “*at omni mulieri, si sana sit, prodeuntes menses moderati sunt, qui ad duarum Atticarum heminarum mensuram, aut paulo plus vel minus, idque ad biduum vel triduum, manant. Longius autem tempus, aut brevius, morbosum aut sterile est.*” Most authors take the attic *κοτυλα* to be equal to the Roman *hemina*; but the *cotylæ* were also called pounds which contained twelve ounces of measure, which were equal to ten ounces in weight, that is as much as the weight of the Roman *hemina*. Various have been the disputes and conjectures of the learned concerning these measures, this last however seems to be the most plausible; and though there

may be some difference between the Attic *cotyla* and the Roman *hemina*, yet it does not appear to be very material towards the settling the quantity of the menstrual flux; physicians seem to have settled the quantity to twenty or twenty-four ounces, whether they reckoned by weight or measure—*Freind* fixes it at twenty, and then computes how much blood ought to be accumulated daily in order to constitute this menstrual plethora.

*Astruc* after observing the vast difference in this respect to be met with in different women, nay even in the very self-same woman at different times, is of opinion that at a medium, the limits of this variation might be settled from eight ounces to sixteen; though there are also instances of women in very good health, who yet menstruate every month, some a greater, and some a lesser quantity than even this. *Haller* reckoned six or eight ounces the ordinary

nary quantity of the menstrual discharge, doctor *Brudnell Exton* says it rarely exceeds four ounces. *Du Hahn* took the following method to determine the quantity of the menstrual discharge; he poured some fresh drawn blood, while warm, the quantity of which he perfectly and precisely knew, upon a piece of linen, then marked the linen exactly how much it was stained. By frequently repeating this, he arrived to that degree of exactness, that he would for any wager determine the quantity of blood received upon any piece of linen, and thus could very nicely determine how much blood was discharged from the *uterus* during the time of menstruation; he found some women lost three ounces, others four or five, not so many who voided half a pound, very few ten ounces, unless where the uterus was any ways diseased. While the internal surface of

the *uterus* remains in such a disposition, as readily to allow the human *ovum*, containing the tender embryo, to adhere and grow to it, a woman will ever continue prolific. To this aptitude the menstrual flux, though but in a small quantity, appears greatly to contribute, nay, though that very rarely happens, some women have proved pregnant, who never had the menstrual discharge, instances of which are to be met with in the writings of *Schenk* and other physicians; their vessels, probably, were so disposed as to be pervious indeed and commodious for the reception of the human *ovum*, but yet not so far dilated as to allow red blood to pass, for it is often observed of women who are deprived of their *menses*, that in place of blood, a small quantity of a thinner fluid comes away at fixed stated times. It is the same case perhaps with the *uterus* in women who  
give

give suck, many of whom I have known to conceive, though they have had no returns of the *menses* since the time of their delivery. Daily experience informs us what a remarkable consent there is between the breasts and the *uterus*. Thus in a virgin come to maturity, the breasts begin to swell, whenever the *uterus* is ready for menstruation; in childbed, as the *lochia* on the third day are lessened, nay frequently entirely cease, the breasts quickly fill, and if the woman suckles her child, the *lochia* return again, whilst the milk passes freely from the nipples; but if she does not give suck, the breasts subside, and what passes by the *uterus* is at first whitish, and then afterwards of a bloody cast, so that, *cæteris paribus*, the *lochia* flow a longer time and in greater abundance, with those who do not give suck. I have sometimes observed that in nurses, in

the room of their *menstrua* they have discharged a small quantity of a thin whitish liquor from the *uterus*, and upon a farther dilatation of the vessels, some blood has followed in several, though not in others. At this time also, it is probable, had they been put to their husbands, they would have in all respects been disposed for conception, for according to *Galen*, conception chiefly takes place when the *menstrua* are nearly stopped—for then those vessels upon the internal surface of the *uterus* are just so much contracted, as to exclude the red globules, yet open enough to let a thinner fluid pass; the same, says he, is the case in the beginning of *menstruation*. Whence in nurses who conceive without any return of their *mensēs*, it would seem that the *uterus*, with respect to its vessels, is in the same condition as when the *mensēs* are about to flow, or beginning to give over;



over; that is, the vessels are not altogether contracted, but only so far, as in the place of blood, to let the thinner humors only pass off. Might not this be the case, where women have conceived without ever having had their *menses*?

The signs, when the *menses* are about to flow are very well described by *Moschio*. The breasts swell, a weight and itching are felt about the *pubis*; they grow lazy, feel a heaviness in the kidneys, sometimes a pain, they yawn and stretch themselves, their cheeks flush and then it goes off again, they are sometimes maudish and seem to loath every thing—these are the most common and usual symptoms which precede or accompany the menstrual flux; many complain of a rigidity or stiffness in the muscles and tendons of the neck, others again are troubled with an head-ach.

The continuance of this menstrual flux varies, in some women it holds a longer, in others a shorter time, in most however it is over in three or four days; it is always counted best to drop gradually, and to flow uninterruptedly till it entirely ceases. Sometimes, it happens that the *menses* flow two or three days, then stop, and presently after return again.—Women under this case find this ill convenience that all the other symptoms return, which usually precede the eruption of the menstrua, particularly a head-ach and a troublesome stiffness in the neck, till the blood again flows from the *uterus* as usual. We may very nearly determine, by the authority of *Hippocrates*, the quality of this blood which comes away by the menstrual flux — *prodit autem sanguis, qualis e victima, citoque concrefcit, si mulier sana est.* Now it is universally known, that the ancients chose

chose the most healthy animals for their sacrifices — and the blood of healthy animals, especially if it springs from an artery, very easily and very speedily coagulates. Prudent physicians who mean to act properly towards the cure of the menstrual obstruction, are ever careful to distinguish properly, whether the disorder arises from a real and true obstruction of the *menses*, or whether the want of that discharge is owing to any other present or preceding cause — in the former case, a *plethora* will follow, and their color will be intensely red — but if it arises from any other disorder, they will be altogether pale and of a bad consistence. — Hence a diversity in the method of cure will be highly necessary — for a *plethora* will require bleeding, when an obstruction arising from a bad habit of body, will demand quite a different treatment.

ment. A paleness may attend a suppression of the *menfes* even where a *plethora* really exists; for it is well known that good sound blood, when drawn from a vein, and left standing in a clean vessel, will separate into two parts, viz. into a thin liquid *serum* and a *coagulum*. If all this *serum* be poured off, in a very few hours a fresh quantity of *serum* will be seen, the red part gradually dissolving, the greatest part of which may be thus converted into a yellow or greenish yellow-colored *serum*.

Now the vessels too greatly distended by the *plethora* lose part of their force, by which they were wont to act upon their contained fluids, the humors therefore will not be so well condensed and worked up, and the red part of the blood will be melted down into a *serum*, the redness of the body will consequently gradually decrease, and so occasion a paleness.

The

The pains of the loins and groins must necessarily happen, because the sinuses of the *uterus* being very numerous dispersed through its whole substance, become turgid with the accumulated blood, the vessels therefore which run in between them, will be necessarily compressed, the neighbouring vessels will be more filled, and consequently more distended. “*Quum menses latuerint* says *Hippocrates*, *dolor detinetimum ventrem, illique pondus incumbere videtur, lumbi & ilia dolent.*”

*Tabarranus* a very ingenious anatomist observes that there is a very free communication between the veins and cavity of the *uterus*; for upon blowing into the veins, he observed the cavity of the *uterus* and *vagina* to be filled with air, and again blowing air into the orifice of the *vagina*, he saw the veins belonging to the *uterus*, *vagina*, and *ovaria* all swell up. When  
therefore

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therefore the *uterus* is in a sound condition, there must be a very quick and easy resorption by the uterine veins.

It would seem therefore that *Hippocrates* from this easy resorption had taken his proofs of fœcundity, when he observes, “*Mulier si utero non concipiat, scire autem velis an conceptura sit, vestibus obvolutam subter suffito: atque si odor quidem ad aures & os usque per corpus tibi pervadere videatur, ipsam nosce per se infœcundam non esse.*” Hence it is very evident, that should the purulent corrupted humors, by stagnation, settle here, they may, by being resorbed, bring on the worst of *cacochymia*'s, and so disorder every function: though something must also happen, from a translocation of matter that has been so resorbed, to all the various parts of the body.

“*Menses non supprimi, (says Hippocrates) utile: ex talibus comitiales morbi fiunt,*

*fiunt, ut arbitror, quibusdam, ventris sub-*  
*ductiones diuturnæ, quibusdam autem hæ-*  
*morrhoides.”* And in another place  
“*Morborum omnium uteri causæ sunt;*  
and Celsus, “*quibus fœminis menstrua non*  
*proveniunt, necesse est, capitis acerbissimi*  
*dolores sint, vel quælibet alia pars morbo*  
*infestetur”*; thus marking out the most  
usual symptom which attends an ob-  
struction of the *menses*, namely, a most  
inveterate and violent head-ach, and  
acknowledging that great influence  
which the *uterus* has over all the parts  
of the body.

From a variety of faithful observa-  
tions, it is certain, that the blood, on  
account of suppressed *menstrua*, being  
retained and so of course accumu-  
lated within the body, will frequently  
find itself most surprising passages.  
This indeed is chiefly accounted for  
from the vessels being greatly distended  
by the *plethora*, and sometimes break-  
ing,

ing, or even without breaking, being dilated so much as to allow the blood to pass by means of anastomosis; and yet this doth not sufficiently prove, why this should more frequently happen from a plethora, occasioned from a suppression of the *menfes*, than from blood accumulated in the body from any other cause.

The very same cause which opens the uterine vessels (which I publicly confess I know nothing of) might have the very same effects, if applied to other vessels of the body. That this cause however of whatever kind it may be, must lie in the vessels themselves, independent of the heart's peculiar action, is very demonstrable; for notwithstanding the heart goes on in one uniform course of action, yet a disturbed motion is sometimes observable in particular arteries, preceding hæmorrhages—thus a pulsation felt in an  
ulcer,



ulcer, frequently declares an hæmorrhage to be near at hand, a pulsation in the left *hypochondrium*, as often precedes a copious bleeding at the nose, even in persons seemingly in good health. *Mulieri menstruis deficientibus, sanguinem ex naribus bonum, says Hippocrates.*

It is observed by this same divine physician, that the hæmorrhoids do not appear before the time of puberty, nor after the age of forty-two: now the menstrual flux is pretty nearly limited to the same period of time. We have the testimony of very eminent physicians of the quick and surprising relief they have seen procured from the application of leeches to the hæmorrhoids, in a suppression of the *menfes*. I have known several women, who have had an evacuation of blood every month, both by the hæmorrhoids and from the *uterus*, and the deficiency of one of these

these discharges has been curiously supplied by the abundant discharge of the other—nay even according to some authors, the hæmorrhoids are not only to be found in the *Intestinum rectum*, but about the *uterus* itself—*Hæmorrhoides quidem raro in mulieris sinu inveniuntur, sed frequentius in collo matricis & orificio ejus, nasci solent.* vid. Harmon. gynæc. part. poster. Spach. p. 33.

When we consider the communication between the breasts and the *uterus*, we shall have no reason to be surpris'd to see the blood derived, upon a suppression of the *menses*, into the breasts and so sometimes pass out at the nipples. *Hippocrates* observes, “*At conclusi uteri menses ad mammas remittunt, & ad pectus ascendere cogunt.*” *Ambrose Parey* gives us the case of a woman who monthly menstruated at the breasts, so as to be oblig'd to have three or four cloths in readiness to receive the blood.

Though

Though the vessels of the skin in general allow a passage only to the most fine and subtle parts of the fluids to pass through them, yet they are so capable of dilatation, that they will sometimes discharge the blood itself. It has been observed, that the sweat which is thrown out in consequence of hard labor and exercise in the very hottest months of summer, has tinged the linen red, and more particularly under the armpits.—

The menstrual blood, when it cannot obtain a passage by the usual outlets, will force its way through different parts of the body; of which many instances and curious cases may be seen in the writings of the learned.—

We should be very attentive how we act with our patients about the time of their beginning to menstruate; otherwise we may commit many errors in practice of the most dangerous con-  
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sequence; for at this time they may be seized with other disorders, which may not depend upon the approaching menstruation, but arise from causes extremely different; and yet it is no ways uncommon to see every thing ascribed to this cause only, not alone by ignorant women, but even by physicians, less attentive to every minute particular circumstance, while they are engaged, or rather overhurred by a large and extensive practice, I have known very powerful emmenagogues proposed in the beginning of the small-pox, when it has been attended with a pain in the back, a redness of the face, a shivering and some other febrile symptoms.—Mothers are frequently too solicitous, at a certain period of life, and almost oblige physicians, to administer every remedy they can think of, to bring down the *catamenia*. Whereas it is the proper business of nature,

nature, so to dispose the *uterus* by slow degrees, and gently dilating the extremities of the vessels, properly to send forth the menstrual blood.—

When therefore the usual time of life is at hand, and both the breasts begin equally to swell; when we observe the body suddenly to grow, and that the face looks more than commonly florid; if at the same time a pain in the loins, and in the small of the back, a stiffness and an obtuse pain about the neck and groins be perceived, we may then be pretty certain that the female body is disposed for the menstrual eruption. It will then be proper to assist the first efforts of nature by gentle bathing, friction of the legs and thighs, and the milder emmenagogues. In some, though not very often, the first *menstrua* flow without any uneasiness, and, the vessels of the *uterus* being once opened in this man-

ner, the after-periods have gone on regularly, without any of these fore-mentioned symptoms; at least they seldom appeared, or when they did, were never very sharp or severe.

The *hymen* naturally allows a sufficient aperture for the passage of the menstrual blood: but it is sometimes observed to degenerate into a very dense membrane, without any opening whatsoever. *Diemberbroeck* affirms he once dissected a young woman three and twenty years old in the publick anatomical school, and found this membrane entirely continued, without any perforation at all, and so strong and firm, as to have resisted the most vigorous efforts of the stoutest assaults any male champion could have made upon it.—These are called *atretæ* or imperforated; we met with several such instances in medical and anatomical writers. Præternatural membranes of this kind are not

not only to be met with near the orifice of the *vagina*, but much higher also—a surprizing case of which we find in *Ruyfch*. A woman big with child (says he) had suffered most intense labor pains, infomuch that her cries filled the whole neighbourhood with her distressful condition, nor could she hasten her delivery by the most powerful and strongest efforts—being sent for, “*invenit membranam hymenem, integram, valde crassam & a fœtus capite, exitum quærente foras extensam.*” He found the membrane *hymen* entirely whole, immensely thick, and protruded by the head of the fœtus in its endeavors to make itself a passage. This membrane he divided with a pair of scissars, introduced upon a director, for fear of injuring the child’s head—the labor however was by no means advanced, for another mem-

U 3

brane

brane presented itself, obstructing the passage of the *vulva* a little higher up—which being also divided, a fine stout male child was immediately brought forth, without injury to the mother, who in a few weeks was perfectly recovered, and both she and her boy were in good health, when *Ruyfch* first published this very remarkable case. What is most to be wondered at, is, that this woman should, notwithstanding this double membrane, be enabled to conceive at all.—

A suppression of the *menstrua* arising from such a cause, is easily cured by the hand of a skilful surgeon—and this may be very easily known, viz. if at the usual time, all the signs of the menstrual flux appear, without the least discharge; if the same symptoms return monthly, and the *uterus* at the same time grows more and more turgid, and  
occasions



occasions the belly to swell; if this swelling is observed chiefly about the lower part of the *abdomen*, is of a spherical form, smooth, soft, and equal; or when you press it, nothing is perceived like the stirring of a child—if this disorder has continued for some time, and the swelling encreases so far, as greatly to exceed the common size of a woman with child, a little before the time of delivery.

It is necessary in the cure, that the menstrual flux come away in due time, and in proper quantity; but as the causes which prevent this may be various, so do they require different methods of treatment. Nothing general therefore can be determined upon this subject; but, in order to the obtaining of a successful cure, we must be particularly attentive to every minute cause which may occasion a suppression

of the *menses*; for if the most powerful emmenagogues are administered, when these outlets, by which the blood should naturally flow, are entirely shut up, they may do much mischief, without the least probability of doing service. It would be in vain to attempt to bring down the *catamenia* in a pale leucophlegmatic girl, where, for want of sound wholesome blood, the functions are all languid and disordered, unless we first endeavor to strengthen the lax and debilitated habit, so that by the power of the viscera, and the vessels, the nourishment she takes may be converted into good blood. If, on the contrary, the uterine vessels are so constricted, as not to be easily dilated and give an easy passage to the blood, an opposite method will be necessary; this resistance of the vessels is to be overcome by the use of soft and emollient

mollient remedies, both externally as well as internally prescribed.—

The legs and feet receive their vessels from the external iliac arteries, the uterus too not only receives them from the hypogastric but from the same external iliacs, and communicates by various *anastomoses*, it will therefore be very evident, when the vessels of the feet relaxed by warm bathing, and motion accelerated in those parts by friction, a greater quantity of blood will be derived toward the *aorta*, where it divides into the iliacs, and so cause a greater pressure upon the vessels of the *uterus*, and so dilate their extremities, as to give an easy vent to the menstrual discharge.

*Warmth* in the feet is particularly serviceable at the time of menstruation, *cold* on the contrary very destructive: all the viscera of the abdomen are badly  
affected

affected when the feet are intensely cold, no wonder therefore that a suppression of the *menfes* should happen in consequence of a contraction of the vessels. Warm bathings and frictions of the feet therefore are highly serviceable in driving off the cold, and recalling and encreasing the heat in the lower extremities of the body, as they accelerate the blood's motion, and derive at the same time a greater quantity of humors into the legs and feet; since however the lower extremities receive their blood from the external iliac arteries, but the *uterus* chiefly from the hypogastric, it will evidently follow, that the more the vessels of the legs and feet are tumefied and swelled, so much less will be the pressure upon the uterine vessels; and therefore if by means of warm bathing and fomentations and frictions of the  
legs

legs and feet the blood's motion is accelerated through the iliac arteries, the passage of the blood through the crural artery may be impeded or lessened, the force and quantity of blood moving through the uterine vessels would certainly be increased, and so remove such obstacles, which could not have been done by any other means.

Venæsection is only necessary in a suppression of the *menses*, when all the signs of a *plethora* are present; for if they are defective, from a scarcity of good blood, in bodies already exhausted by former diseases, *repletion*, not *evacuation* is, then the remedy. Nor even, when the *plethora* itself shall have degenerated into a *cacochymia*, is it then always requisite to open a vein, but rather to take some other evacuant remedies, which, without lessening the quantity of good blood, may draw  
away

away the peccant humors out of the body, or so change them as that they may again acquire the nature and disposition of the sound humors.—“*Hydrops in ventre a menstruis magna ex parte, vel omnino deficientibus plerumque oritur, says Manningham:*” if a dropfy then is once formed from this cause, who would venture to prescribe bleeding? and yet it may be of service in the suppression of the *menstrua* itself, which was the original cause of that dropfy.

Since the circulation of the blood has been known, the advantage of bleeding in the feet, to encourage the menstrual discharge, has been more clearly understood; and although indeed it is not of service in every suppression of the *menses*, yet it is greatly so in many cases. If a tension and sense of weight be felt about the pubes  
and

and groins, and a pain about the loins, at the time when the menstrual period is at hand, we know that the uterine vessels are quite full and distended, though the extremities of the arteries opening into the cavity of the *uterus* may not, at the same time, be sufficiently dilated to allow the distending blood to pass. Should these vessels then, after warm bathing particularly by way of vapor, be relaxed, and the motion through the repleted vessels be, at one and the same time, encreased, we may then pronounce there are hopes of getting so far the better of that resistance, towards their extremities, as to procure an easy discharge of the menstrua, and of course a relief to all these troublesome complaints.

The *plethora* distends the larger vessels, alters the secretions through the smaller vessels, compresses the veins,  
and.

and so by the tumefaction of the larger branches shuts up the extreme orifices of the smaller arteries, whence a free circulation is prevented. Whilst the uterine vessels then are thus distended, they will be unable to contract themselves, or to send the blood forward which is contained within them, and every thing consequently will tend towards stagnation. As soon as a vein is once opened in the feet, the blood will be driven more rapidly and in a larger quantity into the crural artery, the uterine vessels will not be so much pressed, nor so greatly distended; hence the arteries will begin to contract themselves and send the blood forward into the veins, which may now freely empty themselves into the iliac vessels, which are at this time not so much distended: hence a free circulation through the substance of the *uterus* will return, the further-



furthermost extremities of the arteries will be easily dilated, and the *menfes* before fuppreffed, be again reftored.—

The circulation of the blood, it is well known, is greatly obftructed in plethoric people, and, the veffels being too turgid, they feem dull, ftupid, and fluggifh. As foon however as this plenitude is taken off by a plentiful bleeding, the motion through the veffels is reftored, the pulse before obftructed rifes, and becomes quicker and ftronger, the body acquires a fudden vigor and brisknefs, and a circulation of all the humors is again reftored to all the veffels. This is applicable to the *uterus* diftended in its veffels by the accumulated blood, which cannot pafs through the extreme orifices of the veffels—bleeding in the feet therefore obviates all this, and brings on a free difcharge of the *menfes*. If the  
menftrual

menstrual discharge be suppressed upon account of an universal fulness, then, after bleeding, the antiphlogistic purges, which dissolve and evacuate the humors without encreasing the circulatory motion, may have their uses.—

“*Si vero menses, says Hippocrates, omnino non prodeant, pro morbo crassi, lenti, & glutinosi redduntur; imprimis igitur ventrem sursum ac deorsum purgare oportet.*”

for there are even hopes, from the very shock itself given to the body by purgative medicines, that the menstrual flux may be promoted, while, at the same time, every thing that is tough, viscid, and glutinous is removed and carried off; but care must be taken nevertheless not to raise an *hypercatharsis*, which may occasion weakness from too great an evacuation—for this reason in the *materia medica*, among the uterine purgatives of this class, are reckoned

*myrrh,*

*myrrh*, *gum ammoniac*, *bdellium*, &c. which move the belly moderately, and even require a larger dose to effect it; whilst at the same time their aromatic flavor, so benign to the nerves, fills the whole course of the first passages, dissolves the flatulencies so frequently troublesome in such cases, and rouses the languid action of those *viscera* by a grateful and yet not too heating a *stimulus*.

Aloes is a good purgative in these cases, it purges downward, and strengthens the stomach, this is confirmed by *Celsus*, “*sed medicamenta stomachum fere lædunt; ideoque omnibus catharticiis aloë miscenda est.*” This medicine in a lesser dose, and frequently given in the quantity for example of three or four grains, and mixed with the above-mentioned aromatic gums is of excellent efficacy in a suppression of the

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menfes, as alfo when a customary difcharge of blood by the *hæmorrhoids* happens to be ftopped—

The great Dr. *Mead*, in order to attenuate and difsolve the fluids when ftagnating in the veffels from too great a vifcidty, recommends mercury fix times fublimed— but above all the black hellebore, which he declares feldom or ever to have found to fail—he ufually gave a tea fpoonful of the tincture twice a day in a little warm water.

Different authors have recommended different methods; but the remedies are almoft always of fuch a kind as act either by encreasing the motion of the humors, or by their difolving power, or by thofe both united together. But if the expulfive powers are roused up into action by thefe ftimulating medicines, before what is to be expelled, is properly attenuated, or the outlets  
by

by which it is to be discharged are sufficiently pervious, all the complaints will be exasperated from the use of hot emmenagogues, and dangerous hæmorrhages happen in different parts of the body, from the vessels of the uterus remaining so obstinately constricted.—

The ancient physicians were very careful in this particular, and used every method to dispose the vessels to an easier dilatation, before ever they attempted warm emmenagogues; or they at least joined emollients along with them.

If the eighth part of a grain of *colocynth* be administered every three or four hours, it will not act as a purge, but will be of wonderful efficacy in languid phlegmatic habits, as it increases the heat and motion by a gentle and moderate stimulus; it may be very conveniently mixed with *myrrh*,

X. 2

*galbanum,*

*galbanum*, or any other gum recommended under this head.—

“*Mulieres, says the Coan, autem sicciore victus ratione sic uti oportet, sicca namque cibaria ad muliebrium carniū mollitiem magis sunt idonea & meraciores potus ad uteri & fœtus nutritionem meliores existunt.*” Daily experience confirms the truth of this observation, for where women indulge themselves too much in that very bad custom of drinking warm watery infusions, and at the same time use little or no exercise, they become delicate, relaxed, and inactive, are very seldom prolific, and when they do conceive too frequently suffer miscarriages; *Lycurgus* therefore, as a very wise legislator, exercised the bodies of the Spartan virgins in running, wrestling, throwing the quoit and javelins, so that the very root of the fœtus, taking stronger engraftment

in

in bodies so healthy, might grow more vigorously, and that they themselves, bearing their offspring with such activity and briskness, might encounter the pains of child-bearing with more ease and safety—thus did he take care to extend his attention to the future offspring; knowing that the soft and delicate, even when joined to stout and robust husbands, produce but a puny, weak, and sickly progeny—*τα μλντοι*

*σωματα των παραθενων, δρομοις, και παλαις, και βολαις δισκων, &c.*

Plut. Vit. Lyncurg. p. 47, t. 1.

*Of the Diseases of Women with Child.*

**H**IPPOCRATES, among the most certain marks of conception, reckons the following; a shivering cold, then an universal heat, a chattering of the teeth, a convulsion of the joints and other parts of the body, and a torpid sensation in the *uterus*—another chief indication “*si mulieri (says he) purgationes non prodeant, neque horrore, neque febre succedente, ciborum fastidia, ipsi accidant hanc gravidam esse ratione dicito.*”

Some women with child are observed to complain of a universal *nausea*, or loathing, insomuch as to have an aversion to every kind of eatable  
 what-



whatsoever—many are only partially so to some particular food—others again will long for things, about which they were heretofore very indifferent: I have known some married ladies, who, from this appearance only, were well assured of their being with child, though no other previous symptom had determined it. Women frequently, while breeding, are attacked with violent tooth-achs; others again are seized at that period with pains in the ears, and that on one side of the head only, to which they were never subject before. In short many and various are the symptoms which attend women in the beginning of pregnancy.

However, it has been universally acknowledged by men of the greatest eminence as well as experience in the practice of midwifery, that the signs of pregnancy, especially in the first

months of conception, are not entirely to be depended upon.—

There is nothing in which a physician may so soon forfeit his character as in his determining about the pregnancy of women; he should give his opinion with the utmost caution.—

“*Qui utero gerunt, iis os uteri connivet.*”  
*Galen*, in his commentary upon this aphorism, looks upon this closing up of the *uterus* as one of the most certain signs of pregnancy, when the midwife can reach it with her finger; for in the beginning of conception it sometimes lies higher up in the *vagina*; but in order to draw a certain conclusion by which the pregnancy is to be determined, for the orifice of the *uterus* may be diseased, inflamed for instance, or schirrous, it is requisite, that the *os uteri* be not only shut, but feel soft likewise.

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The blood retained in pregnant women is not so much intended for the use of the *embryo* itself as of the *uterus*; from this uterine blood the finer humors are separated for the use of the *embryo*, but no red blood comes near it in the beginning of conception. I have had occasion to examine several of the smallest embryos excluded together with the membranes and the *placenta*; but I could discover no red blood, either in the little body of the embryo itself, or in the membranes, or in the *placenta*, which at first, as it is well known, covers the whole surface almost of the *chorion*. But the *uterus* being entirely vascular, becomes gradually distended, so that its cavity, so small in women not with child, shall by degrees be so dilated, as to be able to contain the *fœtus* together with its secundines, and the water collected in the membranes.—

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The antient physicians as may very demonstratively be proved applied every thing they had seen and observed concerning the *uterus* of animals (for they had never seen any other) to females of the human species. Thus the division of the cavity of the *uterus* into right and left, which we find in the forked *uterus* of brutes, is very unjustly ascribed to the human *uterus* — The womb of brutes is membranous and very thin — the human womb is quite of a different consistence.

*Mauriceau* obstinately defends the opinion of the ancients and particularly of *Galen* concerning the thinness of the gravid *uterus*, and this he endeavors to prove by a variety of authorities: he was shocked to think that many very eminent anatomists should imagine that a gravid *uterus*,  
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*of Women with Child.*

by a kind of miracle in nature, the more it was distended should encrease the more in thickness. He even appeals to their ocular inspection, whether there is not an absurdity in maintaining such an opinion.—He would have the same thing obtain in the *uterus* which is observed to take place in the urinary bladder, which when empty, appears thick, but thin and membranous when distended with urine — he confesses indeed, that in the bodies of women, who have suddenly died soon after delivery, he has found the uterus near the breadth of two fingers in thickness, but this he attributed to the contraction of the uterus when empty—he owns also that the uterus has been found thick in women who have died without being delivered — but insists on its being preternatural, and occasioned by inflammation, and from the afflux of hu-

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mors after the long and fruitless pains suffered in the time of labor.

*Daventer*, a celebrated man-midwife, and who has wrote professedly upon this subject, refutes this opinion with great judgment.—*Littre* accidentally saw what *Mauriceau* earnestly wished for, in order to be convinced of the thickness of a gravid *uterus*; he saw it about eight lines thick (a French line is the twelfth part of an inch) in a woman, who, on the eighth month of her pregnancy, was killed by a fall.—

*Mery*, a celebrated writer, saw the same thing in a woman who died about four hours after her delivery— from which it is plain, that the thickness of the empty *uterus* is not owing to its contraction, as *Mauriceau* imagined; for a full *uterus* exhibits the same appearance

*Daventer* observes very ingeniously that the thickness of the womb is one  
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cause which prevents the *fundus* from being easily inverted after delivery, and by forcing its way through the capacious orifice of the *uterus*, bringing on a troublesome *prolapsus*, especially when the placenta is removing; if the *uterus* was thin and membranous, such events could hardly be prevented—this seldom happens as the same person who was a very distinguished practitioner in midwifery declares, and then only (to use his own words) *si scilicet insigniter fuerit tenuis, tunc quidem circa manum complicatur instar lintei madidi, neque tam cita tam facilisque contractio est; quod mihi non arridet; quin potius mallet, eum consuetam servare formam, & statim a partu rite contrahi, & circa manum nondum retractum claudi, quod multo pauciora symptomata tunc extimescenda sint.*”

The ingenious Dr. *Noortwyck* having considered this subject thoroughly well,

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is of opinion that the *uterus*, for the most part, retains its former thickness—the gravid uterus, according to him, appears not much to exceed the natural thickness of the uterus before impregnation; whence he very justly infers that in women with child, the substance of the uterus may sometimes encrease, sometimes remain the same, and if it sometimes chance to become thin, it must be considered as a rare and extraordinary case. Now seeing the uterine vessels do not all run in the same plane, but by various interstitial divisions, between the lamellated substance of the *uterus*, and that these vessels are, during the time of pregnancy, considerably dilated and replete with blood; it will be very evident that an attenuation of the *uterus* could not at this time take place according to the rules of nature, but if it did, must have been owing to some preternatural

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ral or morbid cause. Again, the greater the quantity of blood is, with which the uterine vessels are distended, and of course more dilated, so much the more will the substance of the *uterus* be increased in thickness, whence we easily see why it differs in thickness in different subjects—the same author very accurately describes how capacious those vessels may be found and how large the sinuses of the *uterus* may be when filled with blood and communicating with the *chorion* and *placenta*.——

The celebrated *Albinus* has also given us five drawings by which we may observe how large the vessels are, which fill the substance of the *uterus* during the time of gestation; whence *Du Graaf* compared the *uterus* in women big with child, to a sponge filled with blood, and was amazed to consider how the same after delivery, should

should so contract, as to return to its former dimensions in the space of sixteen days; the blood which distended the vessels of the *uterus* during the time of pregnancy, going off by the flowing of the *lochia*.

It is evident that the menstrual blood, which in women with child according to the laws of nature is retained within the body, serves not only for the accretion of the *fœtus*, but is also necessary for the distending and filling the vessels of the *uterus* at the same time. How admirably does this correspond with the doctrine of *Hippocrates*! “ *Ubi enim mulier utero gerit, paulatim a toto corpore sanguis in utero defertur, & in orbem id, quod in utero est, circum sistens, ipsum auget.*”

The human *ovum* not only everywhere contiguous to the concave surface of the uterus but connected with it, is perpetually cherished by the constant

stant warmth of the red blood plentifully contained in the substance of the surrounding womb; and thus an incubation goes on within the woman's body, which in oviparous animals is performed without their bodies; and thus we see to what admirable uses the blood is assigned which was before accustomed to discharge itself monthly, but is now retained within the uterine vessels, and contributes to fill and distend them by a gentle and gradual dilatation. The great *Harvey* ascribes the first part of the formation and growth of the embryo to the red blood; nay he maintains it to exist even before the heart or vessels, and that with it, life itself, begins, on its entrance into the world, and expires with it when life is in its last period.—

It is well known, that in a fecundated egg the first rudiments of the chick may remain a long time concealed,

cealed, without any signs of life or encrease. Let a due degree of heat, whether by the fitting of the hen, or by any other methods, be applied, and we immediately find motion, life, and a gradual encrease, and that indeed in so quick a progression, that in the space of twenty days, the most minute *molecula*, before eluding the acuteſt ſenſe, ſhall now exhibit a chicken in full perfection, which having, by its own native force, broken through its ſhell, in which it had been impriſoned, running about at perfect liberty. That plentiful circumfuſion of warm blood continued through the uterine veſſels, ſeems in like manner to be of no inconfiderable aſſiſtance towards the growth of the human *embryo*.

Sometimes the *omentum* ſeems to be convolved and twiſted by the riſing of the *uterus* — if therefore, either from  
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the compression of the womb, or from any other cause whatever, the *omentum* becomes dry, and shrunk up, the concretion of its *lamellæ* may be apprehended; nor shall we be able, after delivery, to disentangle it, so as to replace it properly: *Ruysch* frequently observed hard tumors, of an oblong shape, remaining in the *abdomen* after delivery, and confesses he was long doubtful what to think of them, till in the dissection of a dead body, he discovered the cause, for he saw “*omentum duos fere digitos crassum, tres digitos latam, spithamam cum dimidia longum, & in substantiam adipo-carnosam degeneratum, atque insuper scirrhosum.*” But this bulky mass (as represented in his tables) adhered above to the bottom of the stomach, and below to the *fundus uteri*; it therefore seems very probable, that the *fundus uteri*, when it ascended, had raised the *omentum*, and

pressed it to the bottom of the stomach, and firmly attached itself to it, and that after delivery the *uterus* contracting drew the attached part of the omentum along with it, and so produced that oblong tumor in the abdomen.

In case a nausea, vomiting, or loss of appetite continue too long, a filthy collection of depraved humors may sometimes be lodged in the stomach and in the *primæ viæ*, which should be carried off, and the more especially if attended with disagreeable belchings, a bitter taste in the mouth, or a foul tongue—a gentle purge of rhubarb is in this case of great use, any of the rougher kind are dangerous.—If there is no great *plethora* (and if there is, after taking away a little blood from a vein) a little generous wine may be allowed in small quantities, and they almost give instantaneous relief, this is agreeable to the sentiment of *Hippocrates*,

“ *meraciores*

*“ meraciores potus ad uteros & fœtus nutritionem meliores existunt.”*

The very rapacious and absurd longing of women with child is remarkable though not to be accounted for—*Tulpius* says he saw a woman who during the time of her pregnancy eat *fourteen hundred herrings*.—My father-in-law, a gentleman of the strictest honor and veracity, told me of a woman big with child who came into his rope-walk and looked very wishfully at a barrel of tar, and every now and then silyly dipped her finger into it, which she as eagerly put into her mouth—observing this he spoke to her, and asked her whether she had any inclination for some; she replied that she had, and would be thankful if he would permit her to dip a penny roul into it, he told her she might, and as many more as she pleased—he saw her

do so, and eat it with a devouring appetite.—

Fainting fits frequently happen from the turgid *uterus* pressing upon the iliac veins, whence a great quantity of blood being retained in and below the *pelvis*, prevents its return to the heart, at least some part of it, whence the force of the heart is much weakened.—

A difficulty of breathing is mostly observed towards the close of pregnancy, when the belly is so big, as to give very little room to the diaphragm to move downwards, and the abdominal muscles are so greatly distended as to be unable to give their assistance.

*Mauriceau* absolutely forbids the use of discutients, in swellings of the breast, but to leave all to nature—he charges those who attend women upon those occasions not to press them when thus swelled too much by wear-  
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ing the cloths too tight above them, for fear of doing mischief.

We may very properly distinguish the times of abortion into three different stages; the first when the *placenta* disengages itself from the *uterus*. It is well known that the human *ovum* adheres most firmly to the *uterus* at the place where it is connected by means of the *placenta*, with which the large vessels of the womb communicate, which when this communication is destroyed, pour out a great deal of blood, which still encreasing, gradually loosens the adhesion of the *chorion* to the *uterus* till it discharges itself by the *os uteri*; this is called the second stage of abortion. The third and last is, when the *fætus* comes away before its due time.

Now if the symptoms which usually attend the first months of pregnancy be remembered, it will very

easily appear how frequently the destruction of this tender connexion of the *fætus* with the *uterus* may be apprehended. Vomiting or any shock to the *abdomen* only, may produce this accident, especially if they be strong and frequent, and it will be still more dangerous if the vessels of the body happen at the same time to be full of blood. — And therefore it is, that abortions most commonly happen about the third month; because the connexion of the *fætus* to the *uterus* is as yet but feeble, and in women of a sanguine habit who have been subject to large menstrual discharges, the uterine vessels are very turgid and full of blood. Bleeding indiscriminately in every woman with child is by no means necessary, nay nor always proper, and frequently is of a bad tendency.

Women who are accustomed to have large menstrual discharges when they are  
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are not pregnant, who feed richly and luxuriously, and use little or no exercise, are frequently plethoric in the first or second months of their pregnancy; to such I have generally and universally advised venæsection, conscious that they otherwise run the risque of a miscarriage—the same precaution is necessary, upon a violent fit of anger, when I have in an instant seen the vessels filled and turgid, the face red and tense, and the eyes blood-shot.—It is too general a practice nevertheless; and physicians have not the courage to oppose it, for fear, if any ill consequence attend the neglect of it, it would be ascribed to them.—“*Mulier utero gerens, (says the incomparable Hippocrates) vena secta abortit, eoque magis, si fœtus grandior fuerit.*” However daily experience informs us that this does not altogether hold true, for  
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a miscarriage does not always follow bleeding.—If a woman be pale and languid, the physician will certainly not direct blood to be taken away, but if on the contrary she is sanguine, warm, and the veins are turgid and full, if she has an head-ach, a running at the nose, or feels a tension about the loins, *pelvis* and groins, then indeed he will open a vein to prevent an abortion which might happen from too great a plenitude of the vessels, always at the same time remembering what *Celsus* has excellently laid down, “ *mulieri prægnanti post curationem quoque viribus opus est, non tantum ad se, sed etiam ad partum sustinendum: non quidquid aut intentionem animi aut prudentiam exigit, protinus ejiciendum est; cum præcipua in hoc ars sit, quæ non annos numeret, neque conceptionem solum videat, sed vires æstimet, & ex eo colligat, possit, nec ne, superesse quod*

*quod vel puerum, vel unum, vel in una muliere, duo corpora, sustineat.*" From the whole context of this passage it is evident that the dispute is only, whether in case of diseases it was right to bleed women with child, and not whether the same was necessary in sound healthy pregnant women. We have frequent opportunities in practice to be convinced that bleeding in acute and inflammatory diseases is highly necessary, and that too, often repeated even in the time of pregnancy. High-seasoned meats and spices and every thing acrid and sharp should be avoided or at least very sparingly used, for a soft and mild disposition of the mother's humors is of great advantage to the child in that tender condition. "*Prægnantibus hypochondrii dolor malum;*" now if the *fundus uteri* ascends obliquely towards the right side (for when

when *Hippocrates* puts this word in the singular number, he always means the right *hypochondrium*) it will press the bulk of the intestines towards the concave part of the liver, where the gall-bladder, biliary ducts, and trunks of the *venæ portæ* are situated, and will by that means produce a number of disorders.—

There is some danger when the lips of the *pudendum* swell, and are œdematous, because such a swelling may obstruct the expulsion of the fœtus; yet œdematous swellings of this kind easily yield; and I have seen a woman, who had these parts surprisingly swelled, and though she obstinately refused to do any thing for it, yet went through her labor extremely well, though the midwife, frightened at the enormity of the tumefied parts, had despaired of success.

Neither

Neither is the cure of this troublesome swelling so difficult, for, by slightly scarifying the lips of the *vulva*, the watery lymph easily finds a passage, and the swelling soon subsides.—A blister might also be applied with very good success; it must however be so laid on, as partly to lie upon the swelled lip of the *pudendum*, and partly upon the adjacent part of the thigh.

An inflammatory swelling of the lips of the vulva attended with a fever is of infinite danger, especially when delivery is near at hand, for the interior parts of the vulva are generally inflamed at the same time; and the most skilful practitioners in midwifery have always observed that women so affected die very soon after the delivery—for the parts so inflamed when they are hard pressed upon, or very roughly handled, very soon become gangrenous; this

this therefore is very naturally to be feared, when the child's head in time of delivery presses and squeezes these inflamed parts, nay even sometimes lacerates the swelling.

A flux of blood from the *uterus* in women with child is ever to be suspected; though there may not always be a little degree of danger attending it—but when it happens during the highest degree of distention of the uterine vessels, that is in the last weeks of gestation, it then becomes highly dangerous; whence the following rule is laid down as a certain practical maxim, “*Quo partui propior est mulier, eo periculosior est hæmorrhagia uterina.*”

Hence numbers of women escape who have had this uterine discharge in the second, third, or fourth month: abortions mostly happen at those periods, seldom after.—*Puzos*, a very celebrated



brated man-midwife, observes, that during his whole practice, he had very seldom known any carried off by a flooding before the fourth or fifth month of pregnancy, unless it was attended with some other dangerous disease, or had been unhappily deprived of the necessary helps in these cases. He much feared for the consequences, when the same thing happened in the seventh, eighth, or ninth month; for notwithstanding the hæmorrhage may not be so very violent before delivery as in other abortions, yet very many of these die soon after they are delivered.—

The *placentæ* of abortions are more difficult to bring away than those of a fœtus arrived at its maturity, because the umbilical cord is very tender and more liable to break with the smallest force, and in younger fœtus's the *placenta*

*centa* is proportionably larger and occupies a larger surface in the *uterus*.

I twice had an occasion to attend a woman in an acute continued and putrid fever, in consequence of some grumous concreted blood remaining in the *uterus* after a three months abortion; one of these died in the fourteenth, the other was carried off on the seventeenth day of the disease.

*Mauriceau* has observed that women with child are in the utmost danger who miscarry while they are under the attack of a continued fever which generally is of the remittent kind, and more particularly so if the breast be affected; he says, he saw many of these to his great concern die very quickly after the miscarriage; *Hippocrates* was aware of this when he says, “*Quæ utero gerentes a febris corripuntur, & vehementer citra manifestam causam extenuantur,*

*tenuantur, pariunt difficulter & periculose, aut abortientes periclitantur.*"

That a woman with child through great loss of blood may be carried off by an hæmorrhage or flooding from the uterus, is not the only danger we have to apprehend; for though she may get the better of this, there is still more to fear from the great loss of blood, and sudden and frequent faintings, that is, of her falling into very difficult disorders of the chronic kind, as a cachexy, dropfy, &c. we may also in consequence of long continued and frequent *syncope's* expect that the blood stagnating in the heart and larger vessels, may form itself into polypous concretions.

During the time of pregnancy, the vessels of the *uterus* are continually enlarging, when the time of delivery approaches, they must consequently become large and capacious, so that when

the *placenta* is separated from the *uterus*, the wide orifices of the enlarged vessels, must pour out the contained blood in a full uninterrupted stream; but a flooding of this sort is far more dangerous, because in pregnancy the *uterus* continues to be filled up, whereas after delivery, when once the *placenta* is brought away, the empty womb may then contract itself, and so lessen the capacity of the vessels, and of consequence diminish the hæmorrhage or flooding.

An hæmorrhage from a rupture of the vessels contained in the umbilical cord is a circumstance which very rarely happens. *La Motte*, an eminent practitioner, declares he never met with such an instance but once. He was assisting at a labor, where he expected an easy and natural delivery: the waters were formed; but just as they were ready to break, he observed  
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his hand stained with a little blood, and (as it very frequently happened) so concluded the child would soon follow. A little after, the waters were broke, and the child's head presented itself, but a large quantity of blood gushed out at the same time, which encreased at every labor pain. He was firmly persuaded, that the hæmorrhage must be occasioned by the loosening of the *placenta* from the *uterus*; neither could he now turn the child, in order to hasten delivery, by extracting it by the feet, because the head was got down into the *pelvis*, and the woman's labor pangs were become so violent, and continual. The patient, being however a woman of great resolution and courage, and conscous of the danger she was in, so forwarded the delivery by her repeated and strenuous efforts, that in a very short time she brought forth a girl, but very weakly;

what had rendered the labor so tedious and difficult, was, that the umbilical cord had twisted itself three rounds about its neck—the woman happily escaped, and had seven more children without any the least accident happening to her: soon as the infant came away, the flooding ceased immediately, and upon examining the umbilical cord, it appeared that one of the varicous knots, so often observed in the umbilical vein, having been opened, as it were by excoriation, had discharged its blood; this, from the mutual pressure and attrition of each circumvolution of the umbilical cord round the infant's neck, might very easily happen. But it is at the same time very evident, that the true cause of this hæmorrhage could never have been known before the delivery had been well over; and till the membranes were already broken, this very  
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ingenious surgeon could scarcely suspect such a circumstance, for he had never seen any thing like it before in all his practice, and the loosening of the *placenta* from the *uterus* had always been most generally considered as the cause of this uterine discharge.

Naturally the human *ovum*, by every part of its surface adheres to the cavity of the *uterus*, which effectually prevents any thing from passing out by the uterine vessels; and even at the time of delivery, when the fœtus is come away, hardly any blood, or very little at least follows, although the *chorion* is on every side separated from the *uterus*, during the exclusion of the child, but as soon as the *placenta* is disengaged from the *uterus*, the blood then comes away in a large quantity, and not before. During the time of pregnancy the vessels of the *uterus* are continually enlarging,

consequently when the time of delivery approaches, they become very large and capacious, so that when the *placenta* is loosened from the *uterus*, we must then expect a full and uninterrupted stream from the wide orifices of the enlarged vessels; if therefore the blood comes away in large discharges from women in the time of pregnancy, we may reasonably take it for granted that the *placenta* is separated from the *uterus*, either entirely or in part.—Now a flooding of this sort is far more dangerous, because in pregnancy the *uterus* continues full; whereas after delivery, when the *placenta* is once brought away, the empty *uterus* contracts itself, and thus lessens the capacity of the vessels and of course in a great measure stops the hæmorrhage. But there may be other causes to bring on a flooding as may be seen at large in *Mauriceau, La Motte,*  
and



and other eminent writers in midwifery.

*Noortwyk* injecting a branch of the iliac artery of a gravid uterus, observed the wax penetrated very deep into the vessels of the *placenta* and *chorion*: upon lifting up the preparation and attempting to separate the *human ovum* from the *uterus* to which it was connected, he could plainly discover the *chorion* to be joined to the *uterus* by a true cellular substance, which might easily be separated upon the slightest attempt; in like manner he observed the *ovum* to adhere to the womb in general, but about the *placenta* the adhesion was much stronger, and the vessels at this place more numerous.—

*Levret* has remarked that when a woman with child was obliged to use mercurial frictions for a *lues venerea*,

and by which the fœtus was also cured, he found manifest proofs of mercury in the water contained in the *amnios*, for it had a leaden color and when rubbed upon copper changed it white, and this so much the more, by so much the more mercury had been used in the friction.

It is very justly esteemed a pretty certain sign of a speedy delivery, when in the time of delivery a small quantity of blood is observed when the waters are formed, as the midwives term it, and greatly dilating the orifice of the *uterus* appear on the outside of it a good way: for the membranes cannot possibly project out so far, but many of those vessels which serve to connect the *chorion* with the *uterus* must be broken, and so discharge that small quantity of blood, with which we see the sheets, and the hands of the midwives so generally

rally tinged. Nor can a very great quantity of blood at this time come away, because, when these tender vessels are broke through, they immediately collapse, and the swelling occasioned by the water fills up the orifice of the womb entirely; when the waters break, the infant's head immediately obtrudes itself, and so fills up the same orifice. "*Mulieri utero gerenti, si mammæ derepente extenuentur, ipsa abortit.*" Says Hippocrates; the reason of which is, that there may be danger; lest on this occasion the vessels of the *uterus* breaking their connexion with the *placenta* and *chorion* in like manner collapse, which can scarce happen without their being first emptied, whence an abortion is most likely to ensue, attended with an hæmorrhage from the uterus.

In women with child, unless it be very near the time of delivery, pains  
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of the loins, if they continue long, are always to be suspected; especially if they return at intervals, and terminate towards the lower parts of the belly; for then they are real labor pains, by which the fœtus however immature, must be excluded; and the miscarriage is frequently preceded by a very dangerous flooding.

Hæmorrhages from the uterus, notwithstanding they seem to be entirely ceased, are very liable to return again—frequently the stoppage is owing to coagulated blood applied to the gaping orifices of the vessels, and which are so well adapted to their diameters as to block up the blood and prevent its discharge—but when these clots drop off, the hæmorrhage returns, and that frequently in a larger quantity—great caution should therefore be had upon these occasions, especially in women with child, who have once had the

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unhappiness to experience this misfortune.

In violent hæmorrhages opiates and gentle ligatures on the veins only will be found very beneficial, stimulating cordials are injurious, instead of which we should direct nourishing broths to be taken often and in small quantities.

Whenever a dangerous flooding comes on, the child should be immediately brought away, and as *Daventer* observes, "*quocumque tempore, sive ante sive post septimum mensem* ; but this should however not be attempted, unless when it can be done without violently dilating the orifice of the *uterus*, and when it is so far open as easily to admit the operator's fingers.

*Of Difficult Deliveries.*

**A** Few days before delivery the swelling of the abdomen descends; the swelling in the upper part of the abdomen subsiding, an unusual pain is felt in the loins, urine comes frequently away, but with difficulty; a slimy humour flows from the vagina. These symptoms afford just grounds to apprehend that the time of delivery is drawing nigh, though they do not amount to a certain proof; for at the time that the child is turned, which was before placed with its head towards the upper part of the womb, many of these symptoms occur. This turning of the child often happens on the eighth month of pregnancy, sometimes

times sooner, sometimes later, and then delivery is thought to be at hand.— We should however not be too forward in pronouncing our sentiments about it. A woman with child is then most assuredly on the point of being delivered, when she feels a pain in her loins, which is not continued, but recurs by fits; which pain passing by the sides of the abdomen, ceases about the *pubis*, with the sense of a *tenesmus*—these the midwives call true labor pains; but false, if the pains are only felt in the abdomen, or if after having begun in the belly, they run back towards the loins: for these pains do not promote the delivery, but rather retard it, and should they prove very troublesome, ought to be removed by opiates, and then the true pains will come on. The pulse then becomes higher and quicker, respiration appears to be more difficult whilst the  
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woman in labor, making an effort at every pang, keeps in her breath. All these symptoms encrease as delivery approaches, whilst violent pains succeed each other with a rapid succession: “*Affero autem (says Hippocrates) mulierem ubi pariat, crebrum spiritum emit-tere, &c. Tum vero potissimum crebro respirat, ubi partui proxima est, tumque maxime lumbis dolet; nam et lumbi a fœtu percutiuntur.*” Mauriceau farther says that the pudenda then begin to swell, and that women in labor are at that time subject to vomit; which he asserts to be no bad sign, as it is vulgarly imagined, but an indication of an approaching delivery; this is confirmed by Sir Richard Manningham, who observes, that “*Vomitus vero inter puerperæ labores, si supra modo non sint, nunquam non utiles sunt.*” But we are not for that reason to prognosticate a happy delivery, as unhappy accidents may

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may frequently happen unexpectedly and without any apparent cause—besides if a vomiting follows as soon as the violent pains begin to cease, we shall have reason to fear the womb is torn.

*Mauriceau* has also observed, that where delivery is at hand, the body of the woman in labor, trembles, especially the legs and thighs; and that she then feels no cold, but on the contrary feels a general warmth; this tremor however is by no means a bad symptom, but rather favorable—then or soon after, we shall find the humors which flow from the uterus, tinged with blood, which is justly regarded as a sign of an approaching delivery.—

“*Apertio oris uteri mulieris gravidæ non semper parturitionis est signum certum; nonnunquam enim orificium adeo patefactum in quibusdam invenitur, ut digitum inferri sinat mensem ante partum*” is a remark of *Manningham*.

*Daventer*.

*Daventer* prognosticates a happy delivery, “*si uteri infima pars in pelvem illapsa fuerit, ita ut in limine vaginae facile tangi possit: si os uteri, tenue, molle, lateque patulum sit, et per aperturam oris uteri deprehendatur, infantem capite ad exclusionem prævio sive pronoferrî, neque brachio neque funiculo umbilicali intercedente: si simul aquæ in latitudinem se complanent, nonnisi facilis celerque partus expectandus est.*”

All these symptoms are favorable but yet nothing conclusive; for many things may happen to prevent an easy or safe delivery, such as a circumvolution of the navel-string round the neck or any other member of the child, an hydrocephalus, a swelled abdomen, or monstrous configuration, &c.

We should never attempt a speedy delivery in women who lie in for the first time, however impatient they may be; for it is very unsafe; we should  
rather

rather on the contrary proceed leisurely, so that the parts may yield gradually, and not be violently and too suddenly distended; and we should be very cautious at that time how we administer warm and stimulating cordials; should the patient be very languid and faint, and they are found necessary, we should even in that case be very sparing in administering them.

“*Mulieri uteri strangulatione vexatæ, says Hippocrates, aut partus difficultate laboranti, sternutatio superveniens bonum.*” — Sternutatories however are not to be applied, especially if the woman's face be red and turgid, her eyes much swelled, and her head very hot, before previous bleeding at the arms, otherwise there might be danger of bursting some of the vessels of the head, and a mortal apoplexy be the consequence.

*Levret* observes that when the entrance of the *pelvis* is of the larger size, the passage that leads from it is generally narrow and *vice versa*. In the first instance, matters are conducted expeditiously in the beginning of delivery, but towards the end it is greatly impeded; for then there will be less reason to apprehend a *prolapsus uteri*, and the midwife can assist the woman in labor, by gently keeping in the *os coccygis*, which being crooked before sustains the head of the child, and leaves a wider space for its coming away.

Women who have in the earliest part of life been subject to the rickets have, by the universal testimony of the best writers in midwifery very difficult and hard labors; as they are generally hunch-backed, are lame or have their back-bone distorted — though doctor

*Brudenell*

*Brudenell Exton* observes that the structure of the *pelvis* is not always ill-formed though the back-bone is distorted—be this as it will, it is certain that crooked and hunch-backed women have difficult labors, because they breathe with difficulty, and therefore cannot so well exert themselves in their efforts to forward labor.

If therefore the protrusion of the *fœtus* becomes difficult upon account of the close connection of the bones, we should endeavor to soften them by smooth and emollient unctions, fomentations and vapor-baths.

*Mauriceau* denies a compleat separation of the bones of the *pelvis*, though he owns that their juncture may in some measure give way in the time of easy labor, but it cannot be denied, that in a difficult delivery the bones of the *pelvis* are separated from each  
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other. This has been attested by the most eminent professors in midwifery; they found the ligaments soft and dilated, and the bones themselves separated.

The womb sometimes bursts in difficult delivery; although this happens rarely: the immediate cause of such an accident is the kicking of the fœtus when shut up in too narrow a pelvis, especially when the child is convulsed, which is frequently the case when it is at the point of death. The symptoms which precede a rupture of the womb are as follow: the fœtus having for some time remained motionless, is agitated suddenly, and occasions the mother to feel violent acute pains in that part of the womb especially which is threatened with a rupture; that is, about the fore part of the lowermost belly or epigastric region; these joltings return periodically, without any  
limitation

limitation to the intermediate space of time; the last and most violent agitations which are fore-runners of the child's death come at length, and then the motion entirely ceases; for the fœtus generally dies convulsed; to these symptoms Crantz, a very eminent writer upon this subject, adds the following, "*vastum & distentum abdomen, retracta vagina orificium altum, dolores quidem veri, sed violenti, sine magnis intervallis frequentes, sine partus progressu ingrati statim ab initio aut medio naturalis nixus tempore, adsunt. Ruptis aquis, dolores vehementius instant, sine intermissione improbi, sine partus spe crudeles, ita mulierem discruciant, ut & ignarum vulgus his non enixam vehementer miretur, &c. donec tandem violentissimo subsultu elatus fœtus, contractum calcitru uterum perfodit, aut membro magis obtuso dilaceret.*"

The same author afterwards considers whether the womb is broken whilst the waters remain collected, or after they have been discharged from the womb the membranes being broken; and then concludes with this remark, “*nihil certi in hanc rem statui posse; hucusque vero in bene descriptis observationibus uterus semper post effluxas aquas ruptus est.*”

If the following symptoms happen, we may be assured that the womb is already burst,—viz. If for example a fainting fit or great weakness should follow, the mind being uninjured; if the face becomes pale, the pulse is much weaker, if the abdomen swells with a big smooth tumor, attended with a sense of an unusual but not disagreeable warmth; if the extremities are cold, and we perceive the face dropping with cold clammy sweats, we may then expect



expect the poor patient will not hold out long, but will generally die in convulsions. Sometimes when the rupture happens the bystanders will hear the noise of a concussion, and after a fainting fit, the patient seems to recover; the motion of the foetus is seldom or ever felt after this, the pains of delivery are at an end; the limbs of the child which could before be felt in the mouth of the womb, are now no longer to be perceived; that is if either the whole or the greatest part of the foetus adheres to the cavity of the abdomen—in that case by touching the abdomen the parts of the foetus may be more easily distinguished by the touch than they could be before, whilst they still adhered to the cavity of the *uterus*.

It has however been justly observed, that this series of symptoms do not always occur; for some women with-

out any appearance of a rupture in the womb have died in a few hours, whilst others may live several days, in whom there should or at least might have been various and different symptoms according as the fœtus which remains in the abdomen, presses and irritates the neighbouring viscera. Nor does the *fœtus* always pass into the abdomen upon a rupture of the *uterus*, for in an easy and natural birth, the child has been known to come out without the assistance of the midwife, the *placenta* immediately following it. The mother having died the same day, her body was opened, (says *Crantz*) and a rupture of the womb discovered.

We conclude the womb to be ruptured, and that the fœtus adheres in the abdomen, when we cannot perceive the part which was before touched in the orifice of the womb; if pure or congealed blood passes through the  
 pudenda;

pu<sup>d</sup>enda; if the orifice of the womb, as generally happens after delivery, seems inclined to close up, or that the womb collapses; the contrary symptoms indicate the fœtus to be either wholly or in part still contained in the cavity of the uterus.

But as many of the symptoms of a burst womb are taken from the discharge of blood which runs into the cavity of the abdomen, the same might happen in consequence of any other hæmorrhage, although the blood be not collected in the abdomen. If the blood be discharged through the orifice of the *uterus* and *vagina*, the cause will be evident—but if the navel-string should be broken, the membranes being still unhurt, or if the membranes should be broke, and the head of the fœtus stop and fill up the mouth of the womb, the same thing would happen, the cavity of the womb  
will

will be filled with blood, the fœtus being convulsed through inanition will strike the womb, the woman in labor will become extremely languid and pale, and many other symptoms will come on similar to those which attend a rupture of the *uterus* either beginning or already happened; but this cause of an internal hæmorrhage, says *La Motte*, very rarely happens, and it never came under his observation but once in all his practice.

We find another case among the observations of *Levret*, where the umbilical chord was ruptured in the time of labor pains, and winding itself many times about the neck of the child, suffocated it. As the belly became more and more protuberant chiefly about the epigastric region, and felt hard to the touch, he apprehended an inward hæmorrhage, rather than a rupture of the uterus, for after an accident of that sort,

fort, the abdomen indeed fills with blood, but then the tumor is smooth and soft, by which symptom we may distinguish a rupture of the womb from an inward hæmorrhage which fills the whole womb with blood. Thus though nothing could be concluded upon with a nice critical certainty, yet it was easy for so consummate a judge as *Levret* to form a just diagnostic. For as the head of the fœtus filled up almost the whole vagina, and was not moved forward by the violent and frequent pangs which lasted four hours, there was reason to suspect, that the umbilical chord twisted round the neck or some other part of the child, retarded its delivery; that there was room therefore to fear that the *placenta* to which the chord adheres, should separate itself from the *uterus*, and an hæmorrhage succeed.—Nor was he chargeable with the  
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the commission of any fault; in not knowing that the umbilical chord was broken, since that is an event which very rarely happens; nor can the physician or man-midwife know it to be so, so long as the fœtus fills up the whole orifice of the *uterus* with its head.

*Levret* is of opinion, and he was a man of great experience in these affairs, that no attempt should be made to take out the *placenta*, unless the midwife be certain that it is in such a state, as to admit of an easy exclusion, which it is, if before delivery, during delivery, or immediately after, there is a large discharge of blood from the *uterus*, for then we know that the *placenta* is at least partly separated from the womb, and that therefore an entire separation may be reasonably expected, if the navel-string be cautiously and gently pulled.—Nor should the attempt be made, till we have  
reason

reason to imagine the womb has contracted itself. For sometimes the womb though disengaged from the foetus which greatly dilated it, sinks down flat and flaccid, especially after a hard labor, the whole abdomen then feels even, soft and flabby, but when the womb is contracted, and closes up its orifice after delivery, we then find a swelling like a pear tolerably hard and circumscribed; this evinces us that the womb is much contracted, and that we have no cause to fear too large an hæmorrhage will ensue upon taking away the *placenta*. He was therefore for immediately taking away the *placenta*, if the hæmorrhage shewed that it was prepared for coming out, so that the entirely cleared womb might be the better able to contract itself, and so lessen the flooding, for the blood by being detained runs into clots, and forms large lumps, which  
would

would again require much trouble to remove. Nay if such a large lump was to stop up the orifice of the womb, and the flaccid womb not contract itself, the hidden hæmorrhage continues, and the whole cavity of the womb would be filled with blood, and the poor woman would fall into a violent *syncope*. A sign of this dangerous situation, is if upon touching the abdomen the *uterus* appears large and soft; the only thing to be done in this case, is immediately to thrust your hand into the cavity of the uterus and pull out these grumous clots, so that the womb may contract itself, and close up the open vessels.

The happy delivery mostly depends upon the perfect structure of the pelvis; for, if the passage be too narrow, it is plain that the fœtus must pass with great difficulty, nay it will be sometimes impossible. — Though it  
may



may, upon the first appearance, seem very extraordinary, yet have there been instances where, unless midwives have been very cautious, the too great breadth of the pelvis may do injury. For, in order that the delivery may be safe, the fœtus should, by the efforts of the mother, be protruded through the orifice of the womb, gradually dilated; and the womb be at the same time so supported, as not to endanger its falling down; this may happen if the entrance of the pelvis be too wide, the womb in that case will descend with the fœtus, the orifice of the womb being scarce open, as it is not sufficiently stimulated by the pains of delivery, unless the womb be sustained by a proper narrowness of the pelvis. *Deventer*, from long experience knowing that this happens, advises midwives to examine the size of the pelvis when they are sent for  
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to women in labor, and not to be too confident, however favorable appearances may be, for there may otherwise be danger of a *prolapsus uteri*. This mischief may be prevented, if the midwife with her hands supports the uterus descending with the fœtus, lest it protrude from the pudenda. Thus by artificial means is a prop contrived for the womb, which the too great size of the pelvis would not have allowed. There is no doubt but that the womb, by its own contraction, acts in such a manner as to promote delivery.—*Hemsterbuys*, so long since as the middle of the last century, observes “*quod gravidæ canis uterus, abdomine aperto, suo nixu solo, diaphragmate & musculis abdominalibus non adjuvantibus, fœtum excluderet.*”— And there are many reasons to believe that the womb of a human creature has the same power. When the pains  
of

of delivery are at hand, the skilful midwife, by touching the orifice of the womb, perceives this, though the lying-in woman feels no pain; nay by properly irritating the womb, they excite it to drive its contents out of its cavity. After the death of the mother, the womb has by its own force driven out the fœtus: in a living person it often dissolves the placenta, which is left after the child is brought away, and drives it out when dissolved; it also discharges the clotted blood which happens to fill up its cavity, and being very much distended at the time of pregnancy, returns to its former size. Men-midwives have often felt their hands strongly compressed upon putting them into the womb. *Ruyfch* discovered the substance of the uterus to be muscular, and this has been since confirmed by the observation of others.

*Ruyfch* seems to have been so much convinced of the strong contraction of the womb (long before he observed the muscular fibres of it) that he was of opinion that the orifice of the uterus being closely shut up, or the head of the fœtus stopping it up, the humors contained in the womb might by the Fallopian tubes be forced into the cavity of the abdomen and into the pelvis. Nay, and what is still more remarkable, the womb in a delivery of the most difficult kind, seems, by transfudation as it were, to have forced blood out of its own substance into the cavity of the abdomen, which after death has been there found in large clots. A woman died in consequence of a very hard and difficult labor, the fœtus was not excluded; we found the whole anterior surface of the womb covered with clotted blood, which could not be  
sepa-

separated from it—being spread out upon a table, it had the appearance of a cake of coagulated blood, of the length of fifteen thumbs in breadth; a foot broad, and three lines in thickness.—Upon the closest examination, no vessel was found ruptured, nor was there one drop of blood to be observed throughout the whole cavity of the abdomen; so that it is very probable that the blood was forced out of the very substance of the womb by transfusion, by the violent and forcible efforts of the poor suffering creature. This may often probably be the case in very difficult labors, so that the worst consequences may be feared to arise from this corrupt extravasated blood, being melted and destroying the viscera contained in the abdomen, for it is hardly credible that such a quantity of clotted blood, so

collected in the abdomen, can be returned into the course of circulation.

Of a bursting of the womb, *Gregoire*, a famous professor of midwifery in Paris some years ago, gives us sixty instances, during the course of thirty years practice; amongst others he relates one where he perceived that the womb being broken at the side of the placenta, the fœtus with its feet touched the diaphragm of its mother.—In another, he took notice that the head of the child and the whole right side, being without the womb, the other parts remained within, so that the fœtus rode as it were with straddling legs upon its mother's womb.

We not only read of the cleft womb, but the abdomen itself has been known to make a very loud crackling noise in a difficult labor, and that the fœtus has come out through this very aperture,

ture, the placenta taken thence, and the viscera of the abdomen seen by all the by-standers. Yet the lying-in woman was perfectly recovered by the simple application of butter, mixed with white sugar, the scar left; much resembled that which is made on a wound made by a blunt needle. This surprising case would scarce be credible, had it not been strongly confirmed by the affidavits made before a magistrate by the eye-witnessees, and the same attested by the midwife and another woman who drew out the placenta; and is now preserved by the secretaries of the Edinburgh society.

The immediate cause of a burst womb, as described by *Levret*, is the kicking of the fœtus whilst it is inclosed in too narrow a pelvis, especially too when it happens to be in convulsions, which often is the case just before its death; if the womb, at that

time, should be urged by its own force, together with the efforts of the mother, we are much to fear this accident of the womb may happen. Moreover it is to be considered that the force of the muscles is considerably increased by convulsive motions— That these misfortunes have happened to the womb is confirmed by the observations of many writers of eminence and authenticity, and are collected by the celebrated *Crantz*, who wrote an admirable treatise *de rupto utero*.

The excellent *Deventer* recommends it strongly to midwives, in case they find by the touch that the pelvis is narrow, not to press their patients to make forcible efforts, whilst they feel the pains of labor, as there will be no haste to accelerate it; the chief hope upon this occasion, is, that the head of the foetus will be insensibly lengthened by a slow and gentle effort, and so be  
enabled



enabled to pass these streights.—For this reason, no medicine should be administered, nor any art employed to encrease the violence, or the frequency of the pains, though this is often insisted upon by the woman in labor as well as by the by-standers.—The bones of the pelvis consist of several different bones, which seem to have a power of mutually receding from each other, in order to give the fœtus a free passage; these are connected by intervening cartilages and ligaments, and have been observed to swell, to soften, and to grow flexible on the approaching delivery, so that they might be better enabled to yield and give way; but then these things should happen gradually, and it is therefore better that the delivery should not be too precipitate, especially if it be the first labor the woman has gone through. The patient should at that time be

placed in the most convenient position, whether in a bed or chair, so that the *os coccygis* may be able to yield freely, and not be pressed by the weight of the body or of the cloaths. Nay, when the fœtus presents its head in the passage out of the pelvis, *Deventer* advises the midwives to press back the *os coccygis* equally on all sides, by introducing the back part of the hand into the vagina, the palm of it bearing upwards, and by these means to extract the fœtus which is ready to come away.—

It requires a very nice attention to distinguish a syncope from death in pregnant women—and this more especially where they have in their lifetime been subject to fainting-fits and hysterical disorders, and have been seized with a violent syncope at the time of their pregnancy—for then they turn pale, the face falls, becomes wan  
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and ghastly, the extremities are cold and hard, and both pulse and respiration cease entirely. I well remember having been sent for in great haste to a woman with child in her fourth month; she had been previously so exhausted by a *cholera*, and with sudden and copious evacuations in five hours, that after being seized with convulsions, she fell into a real syncope, so that she was thought to be dead by all about her when I arrived.— I succeeded but very little for the first quarter of an hour, though I ordered her extreme parts to be well rubbed, warm cloaths to be applied, and both her tongue and nostrils to be stimulated with spirituous remedies; her friends even appeared offended at my tampering (as they imagined) with the body; I notwithstanding proceeded, and after a few minutes, I perceived some motion in the carotid arteries; she opened her

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her eyes, groaned, and gradually came to herself: her exhausted body was by degrees restored by a good nourishing diet, and her strength by cordials, so that she perfectly recovered; on the seventh month she was delivered of a living child, but so weakly that it lived a few days only.

That most infallible criterion of certain death, the putrefaction of the body, cannot here take place, for the fœtus must certainly perish first; we may sometimes wait two days or longer, before the body begins to smell—under these circumstances we should have recourse to the Cæsarian operation, in order to preserve the child, if possible.—When however upon a very close, careful, and very exact examination, no symptoms of life appear, if no respiration, no motion of the arteries, or warmth is perceived; if the face was ghastly before death, the eyes  
dull

dull and obscured by a viscid covering, if the limbs be stiff, the extremities cold; if the lower jaw be fallen, and remains so, if no sudden and copious evacuation precedes, so that we may suspect a real syncope, if the motion of the humors, now still and discontinued, can be stimulated by no remedies—in that case, if there be not a physical, yet is there at least a moral certainty of death, which may be still farther ascertained, if no signs of sense or motion are observed upon applying fire to the body.

*Of the Diseases of Childbed.*

“**CERTO** certius autumo, says Ruysch, uterum sese summopere movere in partu, omnesque partus conatus naturales ab utero fere pendere. Qui conatus post partum non raro adeo vehementer perseverant, ut uterus semet ipsum invertens e corpore procidat. In aliis puerperiis, paucis horis a partu, expertus sum, uteri motum adeo fuisse evidentem, ut obstetrices imo & puerperæ sæpius mihi dixerint, alium foetum adhuc in utero restare.”

The uterus after delivery should be cleared of all the clotted blood, &c.  
and

and that as much as possible with the hand, for warm and stimulating medicines would be at this time very injurious to the woman. Warm water may be injected into the womb for that purpose which softens and dissolves, and thus we may reasonably hope that what is retained will by these injections be wasted away, and if it should not immediately have that effect, this advantage may at least arise from it, the putrefaction is thus prevented, and the continuance of the clotted blood, &c. in the womb will be rendered less dangerous; and this injection may be repeated with safety.

*Mauriceau* has observed that too large evacuations after delivery, are sometimes occasioned by the thick excrements accumulated in the great intestines at the time of pregnancy. He was called to assist a lying-in woman, from whom the *placenta* had been taken  
away.

away a little too roughly, which brought on a violent hæmorrhage which continued five or six days. Although a few emollient clysters had been thrown up, no excrements came away, but the clysters only—: contrary to the opinion of many who were present, he directed a clyster somewhat stronger than what had been administered, which had so good an effect that it filled a whole pot with hard excrements, upon which the swelling of the abdomen, which before was puffed up and much affected with pain, immediately subsided, and the hæmorrhage ceased. Half an ounce of the tincture of cinnamon diluted in six ounces of distilled balm-water or such-like, given in the quantity of a spoonful every two hours, cheers and strengthens the lying-in woman, and yet does no hurt by increasing the motion of the blood.—

Fatal



Fatal consequences are justly to be apprehended if the *lochia* come away but sparingly, and the breasts do not swell at the usual time, especially if there happens the least appearance of a delirium, or that they speak indistinctly. Some are seized with a violent head-ach, and that in so sudden a manner, that they think their head has been struck by some outward blow; this is attended with a tingling of the ears, a common snoring, the *risus sardonius*, a *subfultus* of the tendons, strong convulsions, and sudden death. Upon opening the skull, a milky matter has been often found lodged in it. *Levret* says he frequently observed acute diseases of the breast in women after delivery, which he very justly attributed to the same cause; the breasts were flabby, when these disorders were coming on, but when luckily the breasts began to swell again,  
a cure

a cure quickly followed—this metastasis of the milky matter may fall upon other parts of the body, not so easily to be removed.—*Chomel*, a very able physician, in a woman who was in her first lying-in, observed the belly to swell in such a manner, that three weeks after delivery it was almost as big as towards the close of her pregnancy. The navel having broke of its own accord, there issued forth a large quantity of a milky and ferous fluid, of a very bad smell, and of a greyish color; two months after this rupture, the patient was perfectly recovered; he was of opinion that this translation of matter was lodged between the duplicature of the peritonæum.—Practical observations confirm that these milky metastases may happen and affect different viscera. In the winter of the year 1746 an epidemical disease was observed in women with child.

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The waters ran from them in their labor, after which the dry, hard, and painful *uterus* began to swell, neither did the *lochia* come away as they ought to have done. The disorder began with a looseness, attended with a pain of the belly, particularly at that place where we find the broad ligaments of the womb, the abdomen was tense, they complained of a head-ach, and were sometimes seized with a cough. On the third or fourth day after delivery the breasts, which then usually begin to swell, grew flaccid, and they died on the fifth or seventh day. This disease for the most part attacked the poor only, especially if they were brought to bed in the hospital. In the month of February this disease was so dangerous, that scarce one out of twenty escaped. Upon opening their bodies after death the milk was found coagulated and adhering to the

outward surface of the intestines, and a ferous fluid swimming in the cavity of the abdomen: a like serum was found in the cavity of the breast of some of them, and in cutting the lungs they discharged a milky but putrid sort of a lymph. Upon closely examining the stomach, intestines and womb, they appeared in a state of inflammation, and grumous blood issued from the dissected vessels of the womb; we observed in many of them a suppuration of the *ovaria*.

May we not naturally therefore conclude, that such a milky metastasis may produce many disorders, which we alone attribute to a suppression of the *lochia*; and that too, just as it is carried to this or that part, and with the greater danger in proportion as it is translated to such as are more necessary to the vital functions, and whence it is not so easily again to be removed.

Thus

Thus for example, when it is thrown into the thighs and legs, we have reason to hope it may be brought into such a state as to dispose it to be carried off through the several passages of the body, either by stool, urine, and above all by sweats, by means of fomentations, frictions, &c. But should it fall upon the inside of the scull, death must be the consequence. But it is very evident, that great care be must taken to distinguish between the swelling of the legs and thighs which happens after delivery, and that which happens in women with child from the distended womb compressing the veins, and which subsides spontaneously as soon as the woman is delivered, and the womb also subsides. For the first begins from the thighs and then descends to the lower parts, resists the touch of the finger when it is handled, neither do they leave any remains of

an impression when we take away the finger; the second begins from the lower parts, ascends gradually, is softer, and more easily yields to the pressure of the fingers, for it is a true anasarca arising from a compression of the veins.

In an inflammation of the womb, the tongue is for the most part rough and as black as if it had been done with ink, and a pain is felt at the extremities of the fingers and nails.

The *uterus* in the time of childbed is more easily irritated than at other times, and will therefore on the slightest stimulus, or passion of the mind be so constricted, as instantly to suppress the *lochia* from which circumstance many bad consequences may be expected: for this reason men of the greatest skill in midwifery when they attend women in labor are apprehensive of danger, if the quickness of the pulse  
which

which rises at the time of delivery, abates not in an hour after, for then an acute disease usually follows, and an inflammation of the uterus may justly be feared, together with all its terrible consequences.

Women of a delicate constitution and who have been subject to hysteric disorders should never quit their bed till the tenth day after delivery, otherwise they run the risque of a *prolapsus uteri*. Women after they have been safely delivered, and reposed themselves for a few hours, should try to make water, though they feel no inclination to do it, otherwise a troublesome suppression may follow. —

*Lévet* has very judiciously divided the diarrhœa of women in childbed into the *critical* and the *symptomatical*. The critical generally begins on the third or fourth day after delivery; the excrements then voided are of a yel-

lowish or white color, or of both those intermixed, which affords great relief, and is attended with no suppression of the *lochia* or urine, but only with a slight diminution of them; the appetite and sleep remain tolerable, the pulse is regular and the abdomen is soft. The symptomatic diarrhœa on the contrary begins much earlier, and is immediately attended with slimy and black stools, which become serous and sometimes purulent and bloody; the *lochia* are suppressed, the abdomen swells, the strength fails, the appetite is destroyed, sleep is banished, and the urine passes in small quantities, leaving a lateritious sediment; the patient is thirsty, feels an inward heat, while the external parts of the body are cold.

The rules of art forbid us to stop a critical diarrhœa, neither is it safe to suppress the symptomatic, for so would putrefaction be locked up with-

in



in the body. Our indication here is to correct the putrefaction already begun with efficacious *antiseptics*, and to restore the sinking strength of the patient; but if any putrefaction mixed with the humors runs off by the vessels and so brings on a weakening flux of the belly, it will more safely go off by urine and sweat. *Hippocrates* after he had advised to relax the body, in a suppression of the *lochia* by an emollient clyster, particularly, adds, “*quod si facile vomuerit, etiam vomitus ciendus; satius autem urinam ciere, & sudorem provocare.*” Gentle diluents which are usually given to women in child-bed in pretty large quantities, promote these discharges tolerably well—sweats however brought on by the warmth of a very hot chamber, bed-cloaths, or heating sudorifics would be very injurious; they should be encouraged only by warm diluting draughts and

the gentle heat of the bed-cloaths. By this means will the fatigue of labor be removed, and the milk fever be carried off.

*Sydenham* has very prudently advised the too long continuance of the remedies called Uterine; and he once, and once only, prescribed laudanum, either by itself or mixed with uterine medicines, in order to compose the disordered spirits; he discommends also the use of clysters, nor would he have them repeated, if the secundines do not come away after one injection.

*Manningham* says, “*si suppressis lociis uterus inflammetur, e brachio potius quam a pede, mittatur sanguis*”—for the motion of the blood through the lower vessels being accelerated, the inflamed womb will suffer the greater violence.—However women in labor should not be too readily bled——.Several symptoms attend lying-in women which often

ten resemble acute disorders, which should not by any means be treated like them.

The first milk which gathers in the breasts after delivery is thin and serous, and very beneficial to the newborn infant, as it yields a thin nourishment, cleanses the stomach and intestines of the filth which they contain, and at the same time gently relaxes the belly.

*Nannoni*, a famous Italian writer, has observed that if an inflammation seized the cellular part of the breast only and a suppuration ensued, the secretion of milk was not thereby impeded: but if on the contrary it affected the glandular part, in that case the secretion of the milk became greatly lessened, and ceased entirely, in proportion as a greater or less part of the glandular substance was stuffed. He farther observed a slower suppuration

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tion in the glandular than in the cellular substance, and that the former was more in danger from a scirrhus hardness remaining.——I have known hemlock taken both inwardly and outwardly applied, happily dispel such tumors.——*Our publick as well as private practice does not hitherto seem to confirm this.*

This same writer never used unctions, but only, after applying the softest linnen towels, he constantly fomented the breasts with warm water; and at night directed a small poultice of crumbs of bread, milk, &c. Sometimes he applied a mercurial plaister to the hardened tumor.

*Of the Diseases of Children.*

**L**EVRET very judiciously advises us neither to bind or cut the navel-string, except the child has first breathed.

But if the new-born child should have a swelled pale face, and should not breathe, or breathe but little, the umbilical cord should be directly cut, though not tied, that a certain quantity of blood may run out, so that the lungs loaded with it, and not as yet dilated by a free inspiration, may be dif-

disengaged, for there would otherwise be danger of suffocation. As soon however as the child begins to cry, now freely breathing, the navel-string is to be tied.

Tumors in the hind part of the head of children just born are dangerous, for they generally die convulsed; although these swellings in other parts of the head are not attended with the like danger.—The futures too far distant is also of bad omen; this usually happens either because they came out of the womb too soon, or because the lymph preternaturally collected in the cavity of the scull, begins to form an hydrocephalus.

Women with the thinnest and most diluted milk in their breasts are the fittest nurses for children, more especially in the first months after they are born; when they grow strong, and it should then be thought necessary to  
give

give it thicker milk, another nurse may be substituted.—

*Moschion* says the diet of nurses should be *communiter, sicut omnes homines ut sana esse possit*—certainly a simple diet is best, such as broth and the flesh of young animals, roasted or boiled; vegetables are also of service, ripe fruits, not acid, new-laid eggs, &c. rich fat meats, sour things, or salt or aromatics are injurious.

*Moschion* advises nurses not to give children suck at all times when they cry, but to examine, whether their cloaths be not too tight, or whether there be an excretion of urine, &c. for he says the child wants nourishment *si hypochondria cava sint*. Too brisk a motion of the cradle may cause the milk to curdle in the child's stomach, we should therefore be cautious in this matter; such cradles are best therefore which do not stand on the ground but  
are

are suspended by cords, and moved equally, and so vibrate like a pendulum, for when the motion is insensibly diminished, they return to a state of rest, and continue so—when they stand on the ground, the instant you have done rocking, the child generally awakes.—

Children when weaned, should begin with a more soft, and so proceed to a more solid diet; so that the viscera may be gradually accustomed to the change.

Children generally enjoy a better state of health when their bodies are open, than when they are bound; “*Quibus copiose profluit alvus, says Hippocrates, & belle concoquunt, illi meliorem sanitatem fruuntur.*” Worms of different kinds are found in different parts of the body.—*Du Verney* gives us the case of a child of five years old, who constantly complained of a violent



lent pain about the root of the nose; it kept its bed three months with a slow fever; then violent convulsions followed; after death, a worm was found in the longitudinal sinus of the brain, about the length of five thumbs breadth, much resembling an earth-worm.

In *Baglivi* we meet with the history of a man of forty years of age, who was suddenly seized with violent pains of his stomach and its neighbouring parts, which lasted eight days; after which he was every half quarter of an hour convulsed both night and day, but which however was soon over, these convulsions were attended with a pale countenance and a privation of strength.—

His body being opened, a worm was found in the cavity of the pericranium, hairy, alive and almost the length of four fingers breadth.—The  
poor

poor wretch before he died, said that he felt as if dogs were gnawing his heart and belly.—

The stomach and bowels abound with a glutinous substance; this slimy matter may afford a tolerable convenient nidus for the eggs of worms, in which they rest themselves, and by which they adhere so closely to the sides of the intestines, as not hardly to be removed from thence by the peristaltic motion of the bowels, nor by the aliments and excrements passing through the cavity of the intestines—and this slimy substance abounds in young subjects, it is for this reason they are supposed to be more frequently troubled with worms—nor is it wonderful, to find these worms sometimes all over covered with this viscid matter.

Smooth worms have been frequently voided by soldiers in camps, when attacked

tacked with the bloody flux, intermitting or remitting fevers. — Doctor *Pringle* observes at the same time, that we are not to imagine these worms were the cause of these disorders, but they exasperated them. —

Worms are divided into three classes, the *round*, the *broad*, and the *ascarides*: the round, called smooth also, are oftener found in the intestines than other human worms; they generally equal a writing-pen in thickness, seldom exceed that size, sometimes they are smaller; their length varies, but very rarely exceeds a foot. —

The *broad*, which are likewise called belly-worms from their smooth figure, and length, which is often immense: it is also called *vermis solitarius*, because frequently found alone and through the whole length of the intestines. —

*Andry* has given a full description of

this worm, and deserves to be consulted upon that subject.

The *ascarides* are, as *Galen* defines them, “*Tenuēs quidem lumbrici in parte præcipue inferiori crassi intestini procreati.*” They are of a smooth figure, very little and pointed at the ends, and sometimes abound in great quantities about the extremity of the *rectum*, and come away with the excrements. They are very restless and extremely lively, and derive their name upon that account from the Greek *ασκαριζειν*, to dance, to leap and to be in constant motion. They are most troublesome towards evening.

People who are troubled with worms swell immediately after eating, because the whole swarm of worms creep towards the upper parts.

Children who are troubled with worms frequently have a cough, this  
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is confirmed both by the authority of *Aetius* and *Freind*.

A variety of symptoms will prevail, according as the worms irritate or gnaw the various parts.——Worms have been found in the *kidnies* and consumed them, in the *liver* which it destroyed.——

The worms of the intestines feed upon the chyle, and deprive the body of its nourishment; hence those who are subject to these disorders are constantly craving for food, and have a most voracious appetite.——They will also be pale and weak, because as blood should be made of good chyle by the action of the vessels and viscera, from which the other more subtile humors should be separated, it is evident that the red blood must be diminished by the diminution of the chyle which is devoured by these little animals.——

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They will be costive also—for when the disease gains ground, and the quantity of worms is encreased, the worms will consume every thin fluid contained in the intestines, what is thick remains, and as the peristaltic motion is disturbed, it is not easily forced towards the anus; hence the bowels being filled, will dilate; their contracting force diminishes, and the belly will swell more and more—daily observation confirms this in children who are troubled with worms.

*Jacquin* observes that those who eat a great deal of unripe fruits, and feed upon fish and salt provisions are more liable to be troubled with worms, than those who live upon a better diet—for this reason it is in general remarked that the children of the poor are much more frequently attacked with worms and swelled bellies. The Autumnal season is more favorable to  
this

this disorder, than any other season of the year—this is confirmed by *Hippocrates*—*Autumno maxime lumbrici & cardialgia.*

Dr. *Alexander Monro* among the various symptoms attending this disorder, recites the following — *Diu observavi,* says he, *in illis hominibus pupillam esse dilatatam qui vermibus in ventriculo vel intestinis laborant, & si non pro signo pathognomico saltem pro syndrome sive symptomatum concursu & optima diagnosi, haberi potest.* It is well known that if the intercostal nerve be cut in a living dog, the eyes grow dim, lose their lustre, shed tears, become hollow, the circumference of the eye is smaller, and the pupil contracted.—He concluded therefore that the intercostal nerve serves to dilate the pupil, and that its action is encreased whenever the nerves of the stomach and bowels

were irritated; this opinion of *Monro's* is well confirmed by what *Mr. Jaquin* wrote to me while he resided in America — where he observes the inhabitants are often troubled with worms, which are usually attended with the following symptoms; *somnolentia, tormina ventris, oculi clari, sed flavescentes, palpebra inferior flavescens, vel cærulescens, convulsiones subito lethales.*

The chief remedies for worms seem to be properly enough divided into three classes. Those of the first class are rough and strong; and it is expected that the peristaltic motion of the intestines is so moved and pressed by them, as to destroy the tender bodies of the worms, so as that they may the more readily be carried out of the body. — The second class are such as may possibly kill and destroy  
the



the worms by thir intense bad and penetrating smell. — The third are such as though neither hurtful by their roughness or stench have nevertheless been found upon repeated trials to have answered the purpose.

To the first class belongs that celebrated remedy prescribed by Dr. Mead—The *Stann. Ras. & Coral. rub.* —powdered tin may in many ways be destructive to worms, but it chiefly acts by its getting between the coats of the stomach and intestines and the worms, and so prevents their easily adhering to the stomach and bowels, so that when a purge is afterwards exhibited they are easily carried off.—

*Garlick* is a remedy belonging to the second class—it encreases the motion in the fibres of the bowels, and so prevents the worms from sticking to their sides, and so be the more readily

conveyed out of the body by purges.

*Assa fœtida* is also a good medicine for the same reason. *Hoffman's* specific in these cases, consisted in pills made of *as. fœtid. myrrh croc. & merc. dulc.* The *valerian* root fresh powdered belongs to this class of medicines, and so may *crude sulphur*.

*Fern root* is a surprising and certain remedy, and drives all sorts of worms out of the human body, if we may give credit to the celebrated *Mr. Marchant*.

*Amatus* gives us a worm powder to which he ascribes great power, viz. *corallin. sem. Santon. an. p. duas, dictamn. alb. bistort. tormentill. & an. p. unam.*—

*Boerhaave* recommended a composition which was made with saffron and myrrh, on which he poured twenty times the quantity of vinegar from the strongest

strongest wine, in a high chemical vial, he boiled it for twelve hours, by percolation after boiling he separated the vinegar enriched with the strength of the ingredients from the dregs, upon the remaining part he poured one half of the former quantity, and boiled it as before; by distilling these two tinctures mixed together over a gentle fire, he thickened it so as to equal the remaining third part; the acid of the vinegar thus became sufficiently concentrated and impregnated with the virtues of the ingredients — he much commended this medicine — when the first passages were overcharged with putrefaction, a fœtid bile, thick viscid phlegm, worms and such other disorders as arose from those causes. —

This is to be taken from one to three drachms in mead or small sweet wine, in the morning on an empty stomach,

at

at least twelve hours after the last meal.—I have known this medicine very frequently exhibited to great advantage.

Vitriolic and steel medicines have also been administered in these cases with success.

Physicians have frequently prescribed bitter medicines to be taken inwardly, and then given clysters of milk, &c.—and yet after all we do not find that bitters are so destructive to worms as it is generally thought.

The dissection of many who have died of worms, evince us that the bowels and stomach, &c. have frequently been eaten through by them.

If the excrements which naturally turn yellow in children, should on a sudden become greenish at the time of their cutting teeth, convulsions are to be expected—because we may conclude from that change of color that  
the

the *commune sensorium* and the whole nervous system are destroyed.

A looseness is of advantage, “*Quibus in dentitione alvus multoties subducitur, illi minus convelluntur quam quibus ita paucies*” is an axiom of *Hippocrates*, who farther observes that the winter season was best adapted to the cutting of teeth, and that children get over it better *cæteris paribus* at this, than at any other season, of the year.

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*HEMOP-*

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